ENGINEERING NEWS-RECORD

John Cramer: Engineer for small towns p.57

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. . . it offers you $6,590 worth of profit-producing features as standard

This P&H will help you dig more profitably . . . offers you unmatched speed and economy of operation.

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Stand-out, operator-approved features put production on a personal basis . . . let you work faster, easier with an Allis-Chalmers 45.

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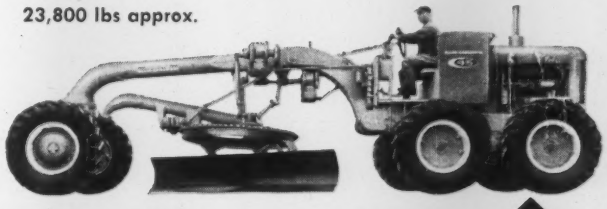
127-hp
23,800 lbs approx.



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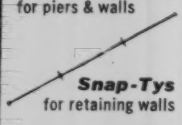

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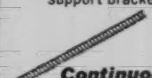

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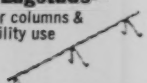

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ENGINEERING NEWS-RECORD

EIGHTY SEVENTH YEAR OF PUBLICATION

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ENGINEERING NEWS-RECORD, Vol. 166, No. 22, JUNE 1, 1961

Published weekly by McGraw-Hill Publishing Company, **James H. McGraw (1860-1948), Founder.** Printed at Albany 1, N. Y. See panel below for directions **regarding subscriptions or change in address. Executive, Editorial, Advertising and Circulation Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** OFFICERS OF THE PUBLICATIONS DIVISION: **Nelson L. Bond**, President; Shelton Fisher, **Wallace F. Traendly**, Senior Vice Presidents; John R. Callaham, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. OFFICERS OF THE CORPORATION: Donald C. McGraw, President; Joseph A. Gerardi, Hugh J. Kelly, Harry L. Waddell, Executive Vice Presidents; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary. **Subscriptions are solicited only from persons with identifiable commercial or professional interests in construction and building. Position and company connection must be indicated on subscription orders. Publisher reserves the right to refuse unqualified subscription.** United States subscription rate for individuals in the field of this publication $6.00 per year, single copies 50 cents; foreign $20 per year, payable in advance. Second-Class mail postage paid at Albany, N. Y. Printed in U.S.A. Title registered in U.S. patent office.

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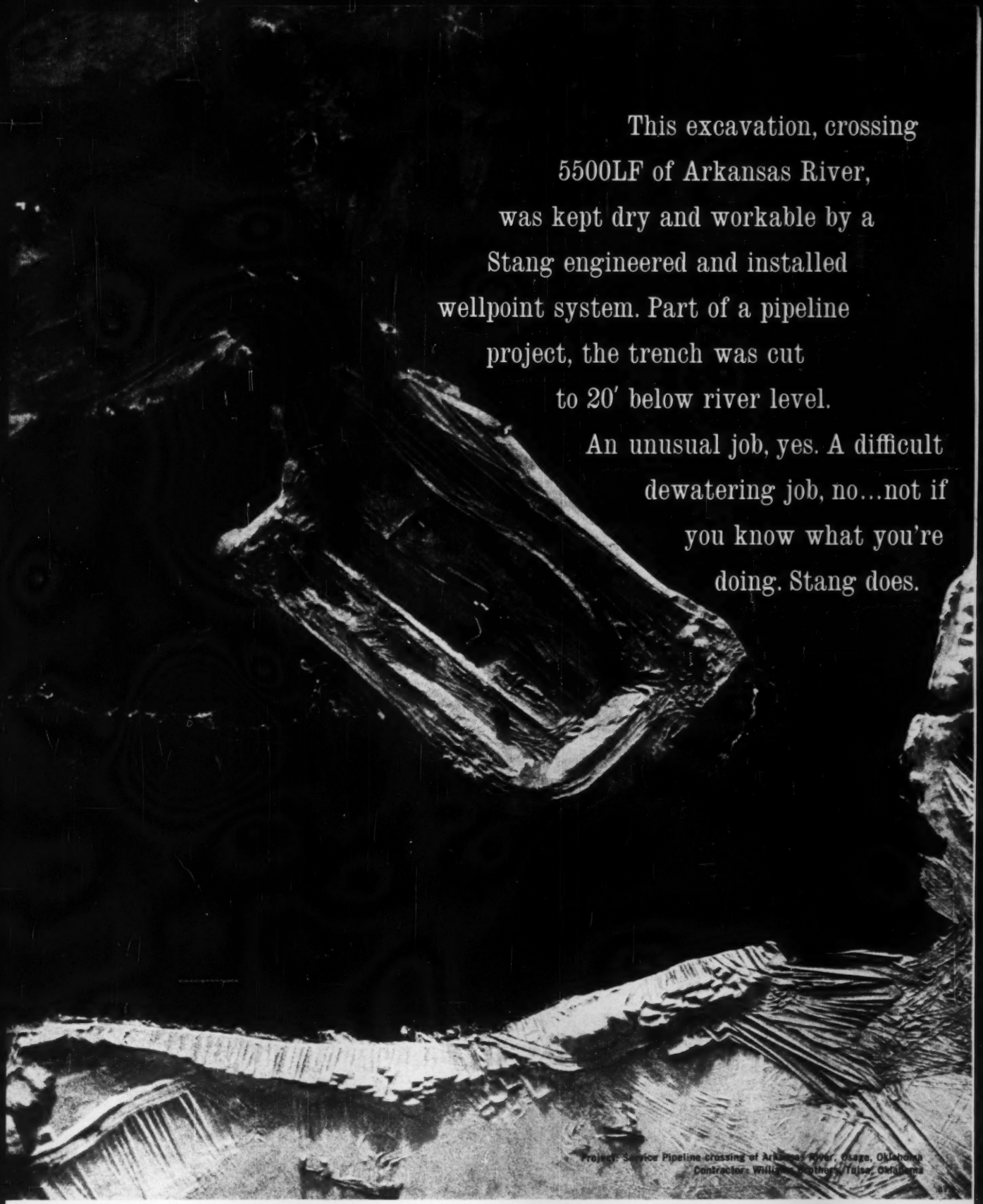

This excavation, crossing
5500LF of Arkansas River,
was kept dry and workable by a
Stang engineered and installed
wellpoint system. Part of a pipeline
project, the trench was cut
to 20′ below river level.
An unusual job, yes. A difficult
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doing. Stang does.

Project: Service Pipeline crossing of Arkansas River, Osage, Oklahoma
Contractor: William [illegible], Tulsa, Oklahoma

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For strength and durability. 7¼ inches of Asphalt surface and base are laid on 17 inches of compacted aggregate.

HERE IS **DEEP STRENGTH** DESIGN ON OHIO INTERSTATE 71

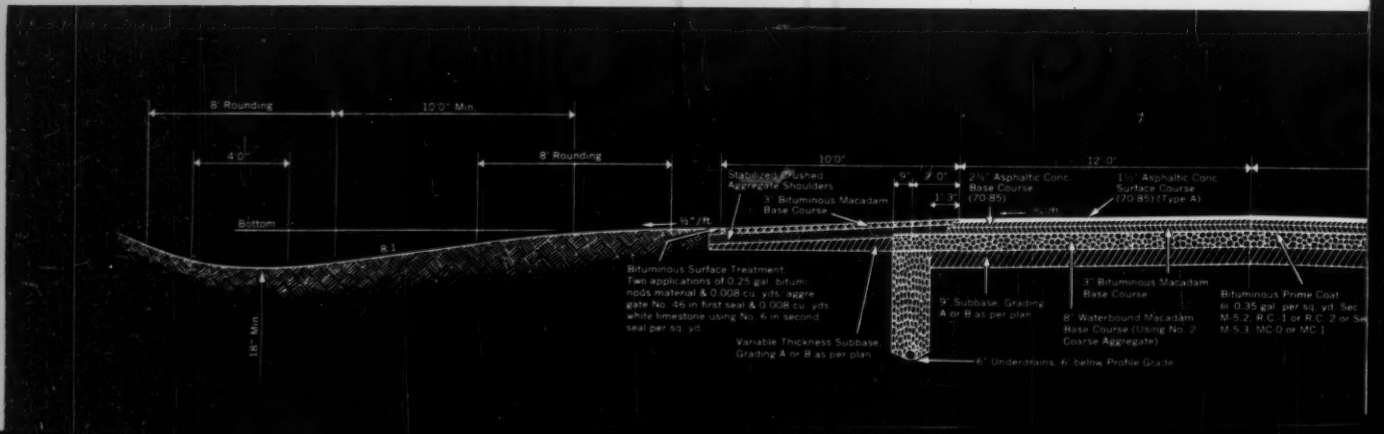
A. 1½-inch Asphalt concrete surface course

B. 2¾-inch Asphalt concrete base course

C. 3-inch penetration Asphalt macadam base course

D. 2—4-inch water-bound macadam base courses

E. 9-inch selected gravel subbase


8' Rounding
10'0" Min
4'0"
8' Rounding
Bottom
8:1
18' Min
10'0"
12'0"
Stabilized Crushed Aggregate Shoulders
3' Bituminous Macadam Base Course
9" 2'0"
2¾" Asphaltic Conc Base Course (70,85)
1½" Asphaltic Conc Surface Course (70,85) (Type A)
Bituminous Surface Treatment Two applications of 0.25 gal. bituminous material & 0.008 cu. yds. aggregate No. 4A in first seal & 0.008 cu. yds. white limestone using No. 6 in second seal per sq. yd.
Variable Thickness Subbase Grading A or B as per plan
9" Subbase, Grading A or B as per plan
3' Bituminous Macadam Base Course
8" Waterbound Macadam Base Course (Using No. 2 Coarse Aggregate)
Bituminous Prime Coat to 0.35 gal. per sq. yd. Sec M-5.2, R.C. 1 or R.C. 2 or Sec M-5.3, MC 0 or MC 1
6" Underdrains, 6' below Profile Grade

New Section of Interstate 71:

First DEEP STRENGTH Asphalt Paved Interstate Highway in Ohio!

New DEEP STRENGTH Asphalt section extends northeast paralleling existing U. S. Route No. 42.

Traffic is now rolling on the first DEEP STRENGTH Asphalt paved Interstate Highway in Ohio. Serving a highly industrialized area, this new 17-mile section of Interstate 71 will be subjected to heavy freight traffic.

That's one reason why Ohio State highway engineers chose DEEP STRENGTH Asphalt pavement. Notice in the cross-section drawing (below) how design follows precepts of DEEP STRENGTH Asphalt construction . . . heavy-duty Asphalt concrete surface course . . . heavy-duty Asphalt base . . . Asphalt primed subbase . . . **depressed median and deep longitudinal drain on outside and inside shoulders for good drainage** . . . heavy proof-rolling of subbase . . . and use of high-contact pressure pneumatic proof-roller on all other courses. HERE IS STRENGTH AND DURABILITY!

When built like this—for DEEP STRENGTH—Asphalt pavements will carry heaviest traffic loads without distress . . . and with minimum maintenance cost.

And, most important, Asphalt pavements built to this Advanced Design Criteria can often save money over the cost of Asphalt pavement designed to other standards. That's because the Advanced Design Criteria permit inexpensive Asphalt base to be substituted, within limits, for more expensive Asphalt concrete surfacing, and allow reduction in total structure thickness when used in place of untreated base.

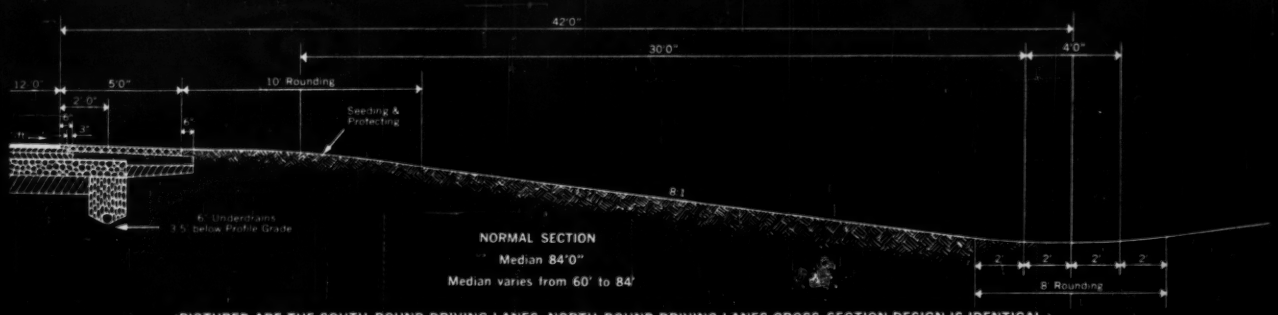
NEW HANDBOOK! A new edition of the *Asphalt Handbook* incorporating all the Advanced Design Criteria implied by the term DEEP STRENGTH Asphalt pavement is now available. Write to The Asphalt Institute.

For smoother riding, the subbase was proof-rolled with a 50-ton compactor using tire pressures of 150 psi. A 30-ton rubber-tire compactor with tire pressures of 120 psi was used on all other courses.

For good drainage, section was designed with a depressed median and a system of deep longitudinal drains on each side of travel lanes to prevent water from entering the foundation courses.

THE ASPHALT INSTITUTE

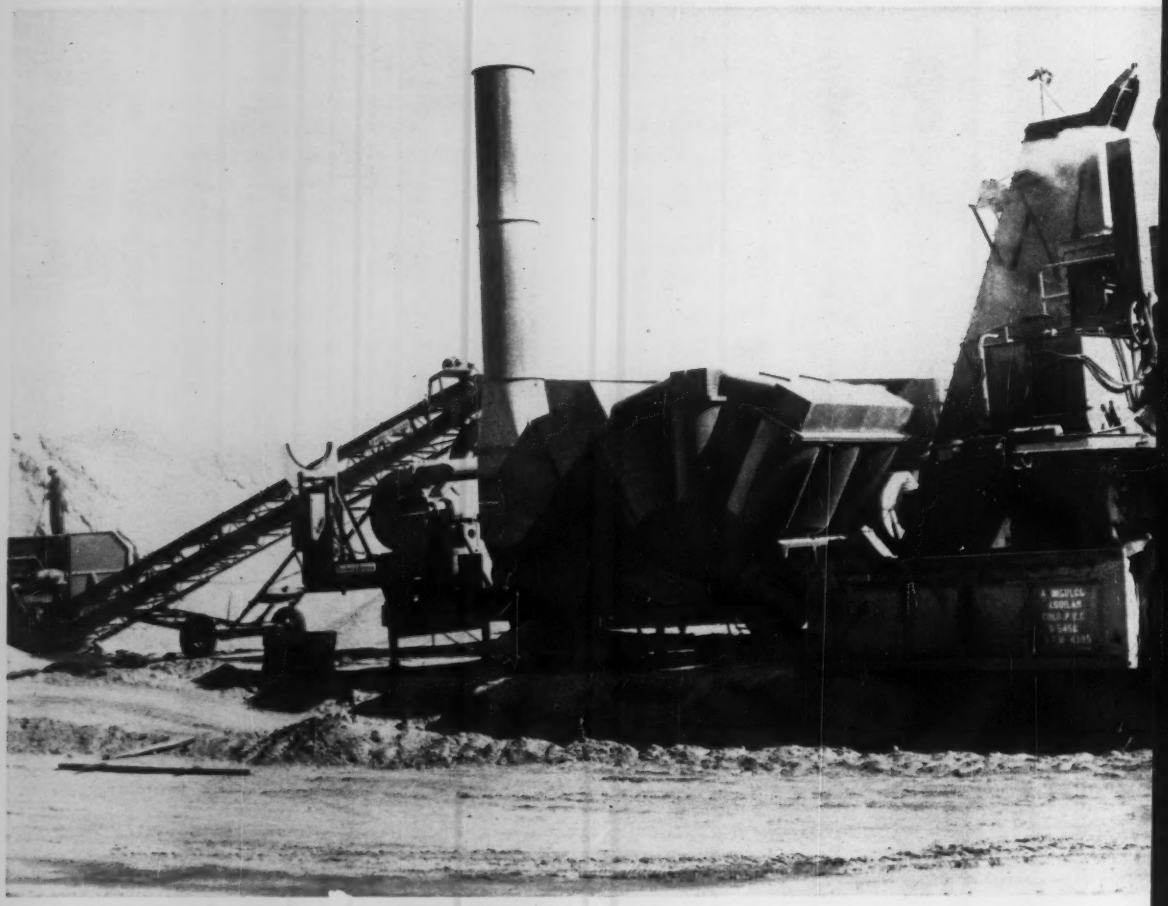
Asphalt Institute Building, College Park, Maryland

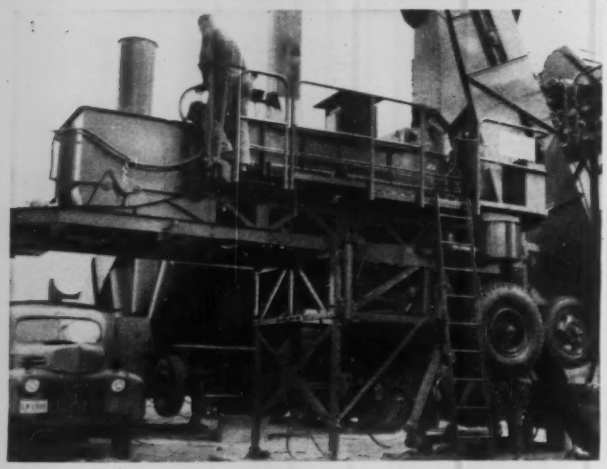


NORMAL SECTION
Median 84'0"
Median varies from 60' to 84'

(PICTURED ARE THE SOUTH-BOUND DRIVING LANES. NORTH-BOUND DRIVING LANES CROSS-SECTION DESIGN IS IDENTICAL.)

BEATS TOUGH DEADLINE WIT
JOB-TO-JOB MOVE

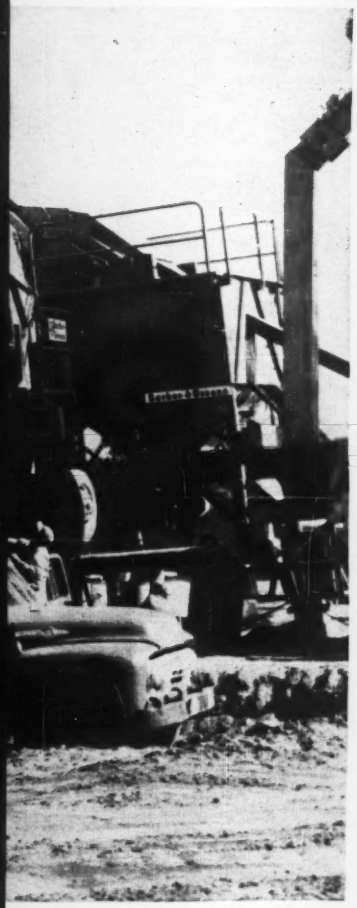




HIGH CAPACITY of Leone's 848-A plant permitted su plying hot mix for two separate projects simultaneousl Domenic Leone's experience with Barber-Greene contin ous type plants is best summed up by the maintenance re ord—over 700,000 tons of mix produced at a maintenan cost of 2¢ per ton. Plant is shown operating near Julesbur Colorado, one of four locations required on the job.

UNMATCHED PORTABILITY of Leone plant permitte teardowns-moves-setups in as little as 11 working hou Closeup shows wheel mounted units and individual hydra lic jacklegs with built-in leveling devices on componen that cut moving time. Large pugmill, ductwork designe as integral part of plant components plus many other ne compact component features all helped increase produ tion and mobility.

275 T.P.H. CAPACITY, IN 11 HOURS



Colorado contractor licks tight schedule on scattered three-project, 64,270-ton contract with 275 t.p.h. average production, speedy teardowns and setups

To keep pace with multiple scattered jobs being let as single contracts, the Domenic Leone Construction Company, Inc. of Trinidad, Colorado:

- Purchased a new high-tonnage, quick-moving Barber-Greene 848-A Continuous asphalt plant.
- Successfully bid a contract that included three scattered paving projects located within a 50 mile radius.
- Beat the tight $400,000 contract completion date by two full weeks.

Domenic Leone, a Colorado contractor since 1921, and son John report: "We didn't have enough capacity or portability to handle this type contract with a single plant until we got our new Barber-Greene 848-A. But this 848-A backed up our bid all the way. We averaged 275 tph for the entire total of 64,270 tons mixed and worked both our Barber-Greene finishers on different projects at the same time. And our crew reduced plant teardown-move-setup time to as little as 11 working hours during this three-job contract. That's why we wound up the job two weeks ahead of schedule."

Price Hargrove, plant superintendent, adds: "Getting needed high tonnage was easy with this all-electric, automatic plant with its high tonnage pugmill and king-sized dryer. And this baby was sure designed for fast moves with ductwork being integral with each unit, power integral with each unit, and individual hydraulic jacklegs with built-in leveling devices on plant components."

See your Barber-Greene Distributor for the asphalt plant that backs up those tight bids with high capacity lowest cost production.

NO. 1 FINISHER LINE includes: new SA-40 general duty model, shown; 879-B economy general duty model; compact 873; and heavy duty high capacity SA-60 and SB-60 models offering a choice of crawler or rubber tire mounting.

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The Rails Still Sit on Wooden Crossties

Readers find ENR's coverage of test installations of prestressed concrete ties a bit too exuberant.

SIR—In the article "Automated Machine Produces Prestressed Concrete Rail Ties" (ENR Apr. 6, p. 32) there are several mjsstatements and erroneous implications. The front cover reference, "Railroads take to prestressed ties," and the statement within the article that "The MR-1 crossties are presently in use on U. S. railroads from coast to coast," probably would lead uninformed readers to assume that prestressed concrete ties presently are being used in considerable quantities for regular renewals.

As a matter of fact the most recent records of the Research Department, Assocation of American Railroads, reveal that only 1,250 prestressed concrete crossties have been installed in tracks for test purposes since February, 1960. The Atlantic Coast Line has inserted 500, the Seaboard 600, the Western Pacific 50, and the Duluth, Messabe & Iron Range 100.

The statement, "Shortages of quallty timber have sparked the railroads' search for a substitute crosstie material," is not true. That declaration clearly was refuted by D. B. Frampton, Jr., past president of The Railway Tie Association, in an address delivered at the 60th annual meeting of the American Railway Engineering Assocation in Chicago on March 18 last. He said in part, "The raw material for pressure treated wood crossties is everywhere available in almost unlimited quantities, and it can be produced quickly with rather simple tools."

Your author is about 75 years behind the times, because back in those days the use of untreated wood ties, with an average service life of approximately eight years, involved the annual replacement of huge numbers of ties. Foresters became alarmed about the possible exhaustion of timber supplies. Railway managements were appalled at the total cost of annual renewals. That was when the railways initiated pressure preservative treatment.

As a result of progressive research and improvements within the American wood preserving industry during the last 75 years the actual average service life of crossties in all tracks of Class I railways has been stepped up to more than 35 years. According to official statistics for 1958 (last available), the 320,816 miles of maintained tracks in Class I roads are supported by some 965 million wood ties practically all of which are pressure treated. The number of ties replaced in 1958 totaled just over 16 million.

That treated wood ties have attained their pre-eminence through competition is evident from the fact that during the last 50 years more than 2,500 patents have been issued in the U.S.A. for substitutes made of other materials. For instance, at one time more than 1,000,000 steel ties and some 25,000 reinforced concrete ties were in service. Because of defects which developed under traffic and because of the excessively high costs involved all were discarded and the treated wood tie still remains the most economical and most serviceable.

Although laboratory tests on prestressed concrete ties have been favorable, the true evaluation of their efficiency depends upon results obtained in actual service during an appreciable period of time. As an example, two methods of fastening rails to the ties were employed in the Seaboard's test, which was installed near Tampa, Fla., in March, 1960. According to a recent inspection report more than 3% of the concrete ties in one group had developed cracks, although the ties of the second group showed no indications of similar failures.

Hence it would seem that with a very limited number of experimental ties in actual railway service for little more than a year at most, it is premature, to say the least, for a responsible engineering journal to declare, "Moreover, the use of concrete eliminates many of the traditional problems associated with timber (e.g., splitting, crushing, decay)."

Modern methods of seasoning or conditioning freshly sawn wood ties and refinements in treating processes during the last several years have gone far in reducing objectionable checking and splitting. For example, one of the largest railways in the country reports that its modern conditioning and treating process has reduced splitting and checking to a mere 1%, compared to incidence ranging up to 70% in the old processes. By reason of these requirements it is anticipated that average service life will be stepped up to 45 years.

Furthermore, the conditioning of "green" ties is accomplished within a matter of 12 to 15 hours compared to 6 to 18 months of air seasoning.

C. MILES BURPEE
American Wood Preservers Institute
Chicago, Ill.

SIR—I am concerned about ENR readers receiving the wrong impression on the part that the Association of American Railroads had in the development, approval and use of the prestressed concrete rail tie.

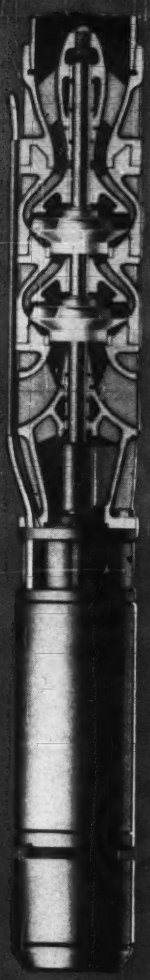
The cross tie referred to in this article as the MR-1 was designed at our Research Center by our staff after extended repeated load laboratory tests with various experimental tie designs. So far as we were able to tell from laboratory simulated service tests, we would judge that this design of tie would give a satisfactory performance in track. The tie was also designed to be used in a 30-in. c-c spacing. It should be recognized, however, that the design of the tie and the spacing and the design of the fastenings used therewith are on an experimental basis at the present time. At least several years service performance will be required before we can judge the performance of the MR-1 prestressed tie and its relative economics compared with present generally used preservatively treated wood tie. We are hopeful that the MR-1 prestressed concrete tie will last 50 years or more but this has not as yet been established by service use.

We are very much interested in the possibilities in the use of prestressed concrete cross ties in the U. S., but we definitely feel that the service performance and economics of such ties are certainly in the experimental stage at the present time.

G. M. MCGEE
Director of Engineering Research
Association of American Railroads
Chicago, Ill.

Editor's Note: The article should have been more explicit in stating that this is a test program involving a relatively small number of prestressed concrete ties. To be accurate, the front cover caption should have read, "Railroads try prestressed ties." Nor is there a shortage of quality timber for ties. And timber tie people properly challenge the statement that "prestressed concrete crossties can now compete economically with timber"; this should have been labeled a claim since it is yet to be proved. In any event, Mr. Burpee's discussion of the widespread use of pressure-treated wood crossties places the subject in accurate prespective.

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.



Regular Submersible

SUBMERSIBLE PUMPS

deliver water

economically

consistently

silently

efficiently

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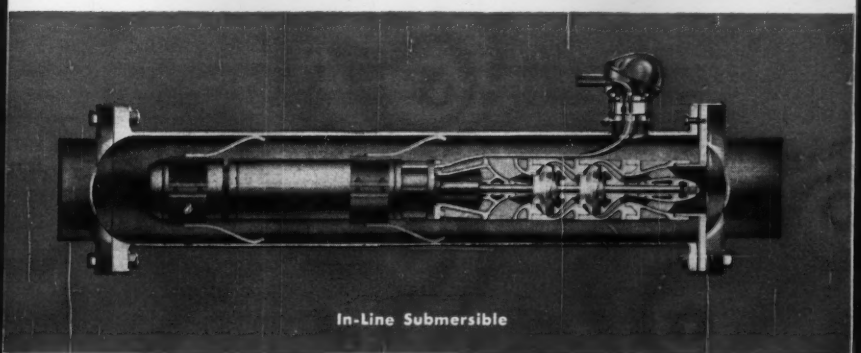
Layne Submersible Pumps are available for wells as small as 6 inches and in capacities from 30 GPM up. For additional information write for free bulletin number 202.

The Layne In-Line Submersible pump provides the answer to many problems in booster pump applications. The pump operates as an integral part of the line and is designed for use by municipalities, industry, such as petroleum and chemical plants and by agriculture. Advantages include: simple installation, no additional space required, continuous service even under flood conditions, and no possibility of surface water contamination.

Layne In-Line pumps are made as small as 4 inch bowls on a 4 inch motor for use in a 6 inch pipe to deliver 30 GPM. Larger sizes are available as required. For additional information write for free bulletin number 203.



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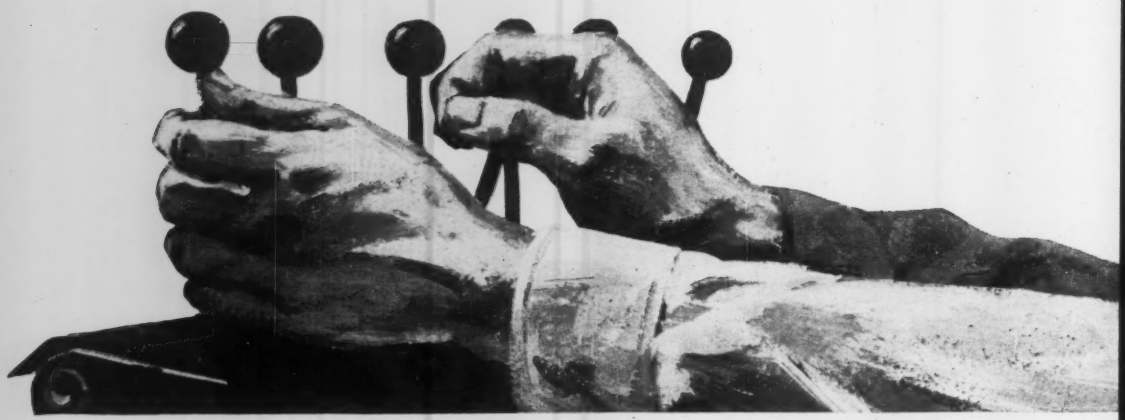

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Speed-o-Matic is not an air, partial booster or mechanical system. Basically, it's the same precise power-hydraulic control system you find on aircraft, machine tools, farm equipment — your own family car if it has power-brakes or steering.

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Speed-o-Matic power-hydraulic controls are <u>standard</u> on the <u>entire</u> Link-Belt Speeder line

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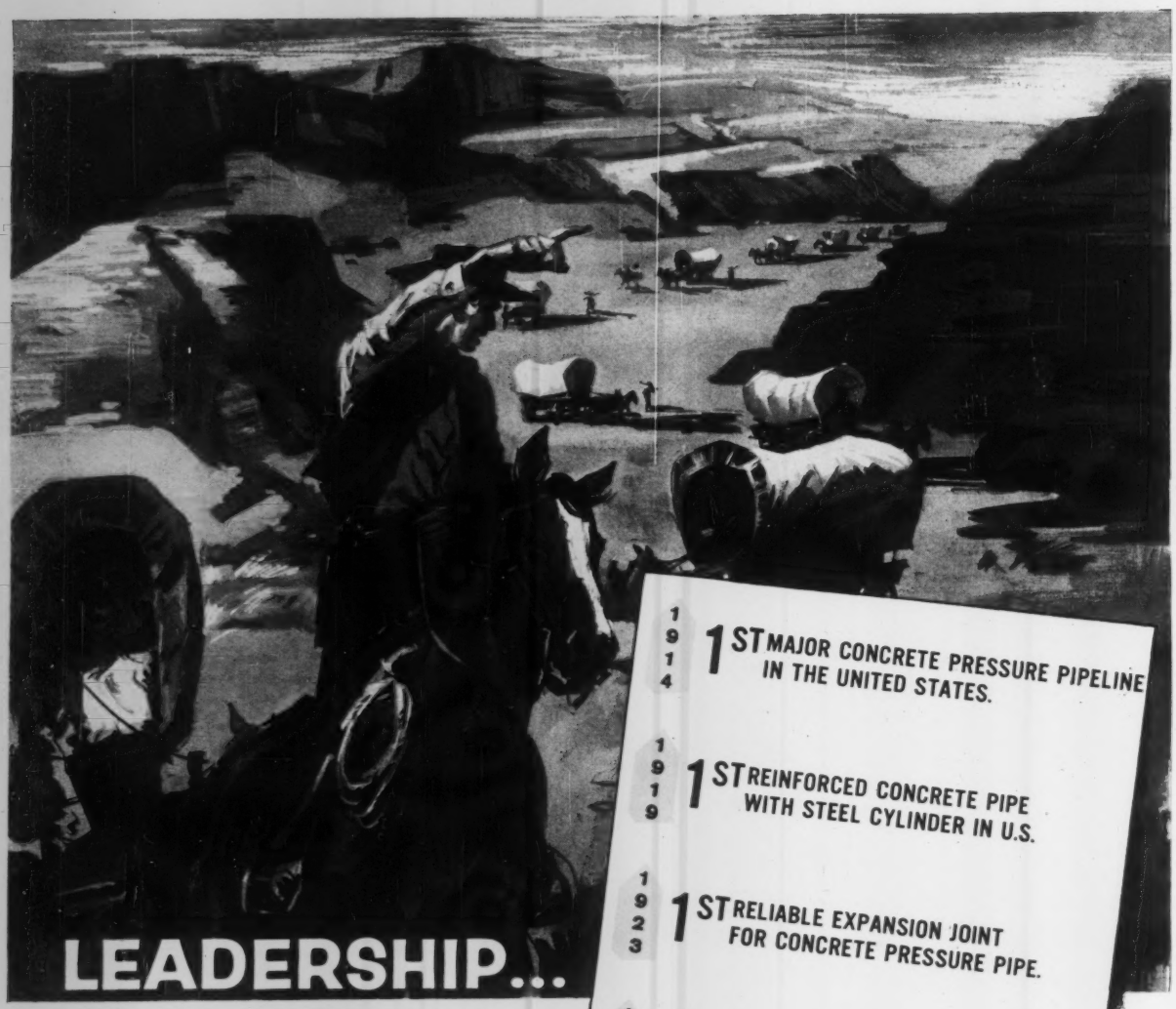

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ENGINEERING NEWS-RECORD

Vol. 166, No. 22 June 1, 1961

Number of copies printed in this issue 87,682

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THE CONSTRUCTION WEEK

UP FROM THE DEAD—Legislation requested by the Los Angeles Metropolitan Transit Authority for its $529.7-million expansion—apparently killed in committee (ENR May 25, p. 13)—passed the State Assembly as a rider to another bill a few days later and went to the Senate for consideration.

CONSULTANTS' FEES—The General Accounting Office, looking over the shoulder of the Bureau of Public Roads into New Mexico's highway costs, reports to Congress that money's awasting. Consultants' fees there have been based on engineers' estimates, instead of on actual costs as bid by contractors. (These are generally below estimates in the state.) Further, GAO says, neither percentage fee is desirable; fees should be based on consultants' competence and their costs, not on construction cost.

DELAWARE COMPACT NEAR—Congress holds the key to consummation of the Delaware River Compact. Pennsylvania is a sure bet next week to join Delaware, New Jersey and New York in ratifying the pact aimed at multi-purpose development of the Delaware River Basin. Congressional approval of the $500-million interstate-federal pact is almost assured despite Interior Secretary Udall's objections (ENR Apr. 20, p. 28).

PACK UP YOUR TROUBLES—The traveling engineer of the 1970s will take a computer console, only slightly larger than a portable radio, along with him, according to John L. Burns, president of the Radio Corp. of America. He will contact his firm's master data-processing system merely by plugging into a telephone outlet and dialing a code number.

INTEREST DROPS—The Administration has ordered a ¼ of 1% cut in the interest rate on home mortgages insured by FHA, bringing the rate to 5¼%. In February, the rate was cut to 5½% from 5¾%. The Federal Home Loan Bank Board, central banker for savings and loan associations, is expected to ease its lending rate to members. This would pave the way for an interest-rate drop on conventional mortgages.

INSPECTING INSPECTION—Chicago's Building Department is ordering a rigorous analysis of its operations by a firm of management consultants. The study, estimated to cost between $15,000 and $20,000, begins this month and will take four to six months. It will cover inspection procedures, record-keeping, inter-bureau relationships, personnel and finances.

TRIAL BALLOON POPPED—Commerce Department officials who publicly suggested a program of insuring loans to "middle-size businesses" got no support from the front office. The Administration doesn't like this FHA-type deal.

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WASHINGTON OBSERVER

- **JFK gets no-strike pledge at bases**
- **Build more shelters, President says**

● **The Administration has received no-strike, no-lockout pledges from contractors, manufacturers and unions to assure "uninterrupted and economical work" at all missile and space sites.** Secretary of Labor Arthur J. Goldberg received the pledges after a series of meetings had been held with all parties concerned.

President Kennedy immediately established an 11-man commission to insure enforcement of the pledges and to handle disputes not settled at the local level. Secretary Goldberg is chairman, with William E. Simkin Director of the Federal Mediation Service as vice chairman, and three three-member groups representing public, industry and labor.

The commission will establish local labor relations committees to handle disputes at each site. If the dispute is a jurisdictional one between building trades unions, it will be handled by a tripartite panel named by the local committee. If it's a jurisdictional dispute involving building trades unions and industrial unions, it will be handled by an all-public panel.

Mr. Goldberg stresses that the pledges signed by management and labor mean, in effect, that decisions of the local committees or the presidential commission are binding. The on-site labor relations committees will try to anticipate labor problems and settle them long before they threaten a violation of the pledges. If this is not possible, the matter will go to the full commission.

Secretary Goldberg insists that the pledges involve only work at actual missile and space sites, including Cape Canaveral. No attempt has been made to extend the idea through the rest of the defense complex, he says. Both he and Mr. Kennedy express "deepest gratification" at the recognition of both management and labor that "the national interest comes first above any other consideration."

—

● **Federal construction funds for bomb and fallout shelters will be tripled if President Kennedy has his way.** That was the big construction news in the President's dramatic appearance before Congress last week. Over-all, he wants well over $1 billion in extra funds for fiscal 1962, starting July 1, for the space program, purchase of more conventional arms and equipment, and the foreign-aid program.

Funds for a revitalized civil defense shelter program would be increased from the present $104.2 million to more than $300 million. New construction would be modest at first, but it would be stepped up sharply in future years. There is little likelihood, however, that it would ever develop into a multibillion-dollar program such as proposed in past years by the Rockefeller committee.

What the President has in mind is shelters in all federal buildings and in all structures built with federal financial aid; and matching grants to construct shelters in state and local government and private buildings.

Acceleration of the space program obviously will mean a speedup in construction of test launching facilities. Details will have to be worked out by the National Aeronautics and Space Agency and other government agencies. No new space sites are envisioned, however.

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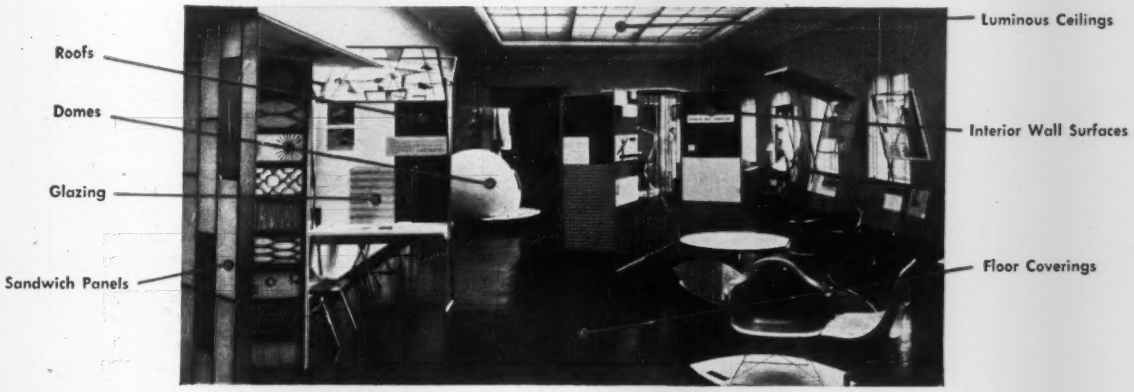


Exhibits reflect plastics industry push for . . .

More Plastic Products in Buildings

For 10 years now, slowly and patiently, the plastics industry has been chipping off bigger and bigger bits of the building market for itself. Now plastics manufacturers think they have tools to go after a whole corner.

The tools: research and education.

With research, the plastics people come up with products the building industry can use to advantage. And with education, they stimulate greater interest in what they have to offer, increase familiarity with the materials and break down some of the doubts about plastics that still exist.

The educational campaign goes into high gear this month: The Ninth National Plastics Exposition will be at New York City's Coliseum June 5 to 9; a traveling exhibit called "Plastics—A New Dimension in Building" is about to tour the country; and there's even a show—"Plastics—USA"—touring the Soviet Union.

The potential that plastics manufacturers see in construction becomes obvious with a few statistics. The use of plastics in buildings has more than doubled in the past five years; yet less than 1% of the money spent on building construction and modernization last year went for plastics. To the plastics industry, however, this 1% represented 18% of its 6-million-lb annual output.

Plastics manufacturers believe that the products they can now offer to the building industry are superior in many respects to competitive materials. But many architects, engineers, contractors and building officials have doubts, stemming mostly from unfamiliarity with plastics.

Nevertheless, plastics have made some headway with building officials in the last few years. The national model codes—the Basic Building Code of the Building Officials Conference of America, the Uniform Building Code of the International Conference of Building Officials, and the Southern Standard Building Code of the Southern Building Code Congress—have a chapter on plastics and provide for submission of data on new products in this field and for approval of such products. Ohio and New York State building codes also have provisions for plastics. And the codes of several major cities—New York, Washington, Detroit, San Francisco, Seattle and Cincinnati, to mention a few—recognize these materials.

Building officials worry particularly about fire resistance. Plastics manufacturers argue that the officials are unduly conservative.

For example, the Uniform Building Code requires that plastics for skylights in metal buildings be a self-extinguishing type. But such plastics generally do not have as good weather resistance as "standard" panels and they are more costly. So plastics manufacturers seek approval of commonly used glass-fiber-reinforced plastics, which may not be self-extinguishing.

"Even the most conservative fire authorities recognize that the limited areas of plastics used in skylighting or sidewall lighting of metal buildings introduce no hazard," Frank X. Ambrose, vice president, Alsynite Division, Reichhold Chemicals, Inc., told the Building Research Institute last month. "Further, in a number of cases where fire has occurred inside such buildings, the fact that the plastic skylights have burned out and vented the fire has actually saved buildings from total destruction."

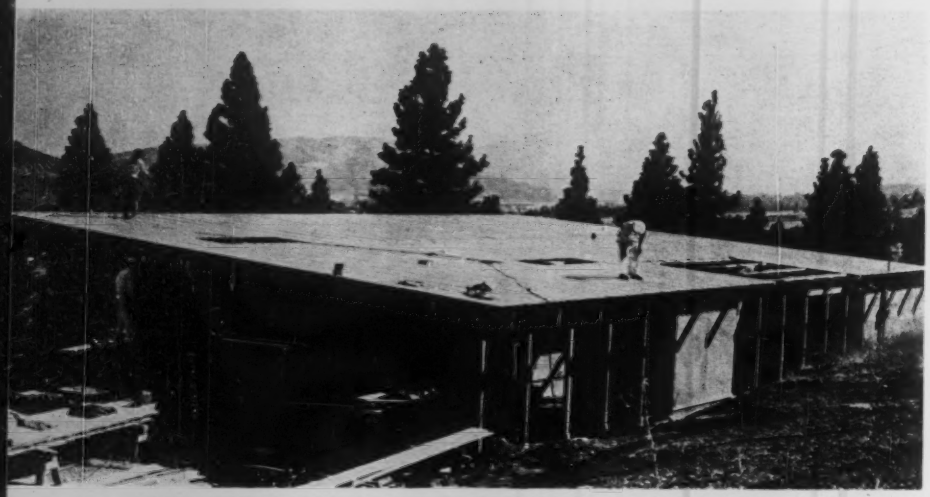
Mr. Ambrose, who is chairman of the Society of the Plastics Industry Building Code Advisory Committee, also claimed that there actually are no generally accepted fire tests that can be used to evaluate properly many applications of plastics. He said the ASTM Tunnel Test was being improperly applied to plastics by some officials.

To overcome resistance to plastics, the plastics industry offers to cooperate with building officials by sponsoring tests that will produce needed data and by drafting technically sound and reasonable code provisions. Hand in glove with the research goes the educational efforts aimed at designers and builders.

Next week's exposition in the New York Coliseum will be the largest ever. At least 260 exhibitors will participate, under the sponsorship of the Society of the Plastics Industry. In addition, numerous conferences will be held during the week at the Hotel Commodore. One on plastics in building will start at 9 a.m. on June 6.

The traveling exhibit, "Plastics—A New Dimension in Buildings," will be on tour for about 30 months. Sponsored by the Society of Plastic Engineers, it consists of 30 exhibits, occupies 2,500 sq ft. Technical conferences will be held simultaneously in some of the cities. The exhibit touring the U.S.S.R. is sponsored by the U. S. Information Agency.

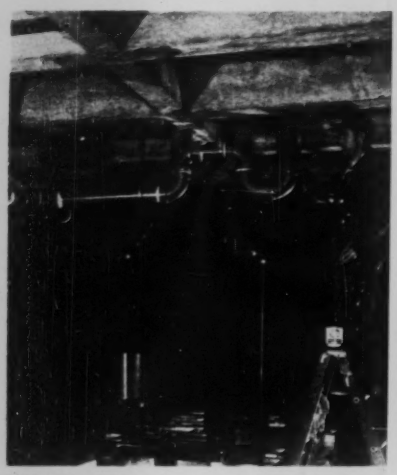
The exhibits will not only show the



ROOF AND WALLS of this Yreka, Calif., house are made of plastics. Ribbed panels span between wood roof beams; flat, semi-opaque panels fit over wood posts.

METAL SIDING coated with vinyl encloses new du Pont plant, Florence, S. C.,

SHUTTER made of vinyl is one of the newest applications of plastics.



PIPE and fittings of polyvinyl chloride form part of acid-waste drainage system.

CHEMOSPHERE, an octagonal house, is held together and sealed with plastics.

. . . New uses for

plastics now available but also how to apply them. Many new and unusual applications are included, reflecting advances made in the past few years.

One spectacular achievement is the 140-ft-dia radome built by Goodyear Aircraft Corp. to house a Navy radar antenna. It is made of 1,646 reinforced-plastic panels bolted together. They vary from 25 to 35 sq ft in area, weigh from 90 to 135 lb.

On a smaller scale, Monsanto Chemical Co. is building 21-ft-dia prefabricated domes, usable for a wide range of purposes, including storage of construction equipment and emergency housing. They are formed with 47 panels of rigid foamed plastic with a weather-resistant plastic coating.

Plastics also are enclosing trussed domes. One example is the 175-ft-dia Climatron in the St. Louis Botanical Garden. And plans call for constructing a 600-ft-dia dome roof with plastics over the proposed Houston sports stadium.

Hyperbolic-paraboloids of plastics

. . . Plastics

Add pipe to the list of products that plastics manufacturers are offering to the construction industry. The plastic pipe industry is growing up and, in competition with old-standby pipe materials, is even showing signs of acting like an adult.

Most of the water installations are counted for about half a million dollars of the plastic industry's sales. Last year, the figure rose to around $55 million, with water pipe's share of that some $35 million—a prodigious growth for an infant industry.

Most of the water installations are service lines. Other plastic installations are for jet wells, well-to-house connections, water sprinkler systems and irrigation lines.

Plastic pipe can't be used for extremely hot water. The upper thermal limit of most plastics suitable for water service is between 140 and 170 F. (One manufacturer does offer a pipe that withstands 215 F.). Manufacturers are careful to point out that at upper thermal limits the strength of the pipe is reduced, at lower temperatures it is increased. Maximum operating pressures for most plastic pipe are between 75 and 150 psi, depending upon the series of pipe selected. Certain heavy-walled pipe will operate at pressures well above 150 psi, however.

Pipe users whose systems operate within these limits cite these advantages for plastic pipe. It's highly resistant

will roof a gasoline station in Midland, Mich. A 64-ft, thin-shell, plastic structure will be erected on the Purdue golf course in Lafayette, Ind. And at Massachusetts Institute of Technology, Prof. A. G. H. Dietz is making studies of hyperbolic-paraboloid roofs for schools, seeking a sound, low cost solution with plastics.

To demonstrate the potentials of plastics in house construction, several manufacturers have sponsored individual houses in which maximum use is made of these new materials. One developed by Monsanto has been on display for several years at Disneyland, Calif. (ENR June 20, 1957, p. 28).

More recently, two other houses have been completed in California. One, in Hollywood Hills, is the 2,200-sq-ft Chemosphere, sponsored by Chem Seal Corp. Octagonal in shape, with aluminum sides and encircling picture window, it perches atop a 30-ft-high concrete column. In this building, epoxy and polysulfide compounds replace nails, screws and bolts, as well as conventional mortars, mastics and paints. Purpose: To prove that plastics give better adhesion, more flexible sealing, improved weatherproofing and more durable surface coatings.

An epoxy bonds the concrete column to its foundation and seals the joint. Glass-fiber tape and an epoxy seal joints in the wood-pulp roof deck. Glass-fiber-reinforced epoxy and an epoxy paint weatherproof the deck. Plastics bond glass windows to glass mullions and also wood to metal in the anchoring of laminated wood roof beams. A polysulfide sprayed on aluminum caps over the wood beams protects against oxidation and glare.

Filon Plastics Corp. sponsored the second house, at Yreka, Calif., about 240 miles north of Sacramento. Temperatures in this area range from 5 F to 100 F. Roofs and walls of this 1,450-sq ft, air-conditioned house are made of plastics. Framing is wood.

Exterior and interior walls are flat, semi-opaque, beige-colored panels made of glass-fiber reinforced plastics. They weigh 8 oz per sq. ft. Ribbed plastic panels form the roof, and flat, snow-colored panels, the ceiling. The latter diffuse light from lamps above them.

While plastics can do an excellent job in weatherproofing conventional flat roofs, they may be unexcelled for protecting roofs with unusual geometric shapes. Vinyl, Neoprene and Hypalon, for example, have been used recently for many thin-shell roofs.

Plastics have also come to the fore as coatings for metal siding or interior paneling. Vinyl is a popular material for this purpose; it is factory applied by continuous rollers or spraying to aluminum, steel, fiberboard and gypsum board.

But these are only a few of the many new ways in which plastics are now being used. Add to these the numerous applications that already are considered conventional and the proposed usage of brand-new plastics and you can see how nearly ready the plastics industry is to carve out for itself a big piece of the juicy building market.

Expand Their Market in Water Pipe

to corrosion. Water inside and ground chemicals outside will not corrode it; its light weight makes it easy to handle; fewer joints are needed since long lengths are available; it's easy to install, and unbreakable; it conducts heat poorly and will not conduct electricity; it's non-toxic; scale build up is minimal; and, most important, it is inexpensive.

Pipe suitable for carrying drinking water bears the seal of the National Sanitation Foundation of the University of Michigan (NSF). Sponsored by the Society of the Plastics Industry (SPI), the foundation studies various plastics and gives its seal of approval to those that are non-toxic and conform to dimensional and tolerance standards established by the U. S. Department of Commerce. The three types of plastic pipe most commonly used for water service bear this seal. They are acrylonitrile-butadiene-styrene (abs), polyethylene, and polyvinyl chloride (pvc).

Of the three, acrylonitrile-butadiene-styrene is noted for its toughness, excellent impact strength even at low temperatures and good dimensional stability. It is relatively rigid, and has a maximum service temperature limit around 160 F. Joints may be made with conventional threaded connections or with the solvent weld method.

Flexible polyethylene pipe represents about 75% of the total dollar market for plastic pipe. It has high impact strength and is inexpensive. Polyethylene is most often chosen for use under moderate pressures and temperatures (not over 120 F). Lengths of the pipe are supplied in 400-ft coils (½ in.) to 200 ft coils (2 in.). It is commonly joined with high impact strength, insert-type fittings and stainless steel clamps.

Polyvinyl chloride pipe is very rigid. Its operating temperature limit is around 150 F. The pipe has good dimensional stability, weathers well and will operate at a wide range of temperatures. It may be joined by threading or by solvent welding.

All three kinds of pipe are available in iron pipe sizes—the familiar schedules 40, 80, 120. Some pipe also comes in solvent welded pipe sizes (SWP)—a measure taken by some extruders to insure that it would be solvent welded.

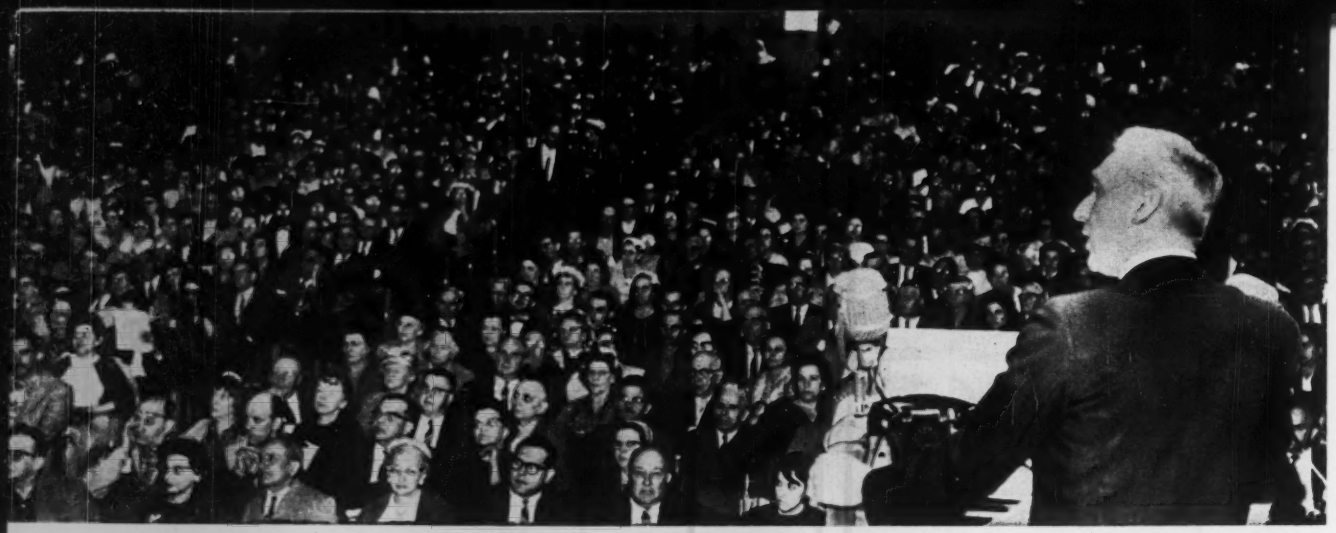
Through the efforts of the Thermoplastics Pipe Division of SPI, the industry has actively sponsored research to develop dimensional and performance standards for plastic pipe. Today, Commercial Standards issued by the Department of Commerce cover abs (CS 218–, 219–, and 220-59), flexible polyethylene (CS 197-60), pvc (CS 207-60). With certain refinements these standards have been incorporated as joint ASTM-SPI standards by the American Society for Testing Materials. SPI is also cooperating in this effort with the American Standards Association and the American Water Works Association.

As responsible agencies formulate standards, various states are amending their plumbing codes to include plastic pipe and fittings. So far Arkansas, California, Illinois, Kentucky, Maine, Wisconsin and Florida either have revised their codes or are now revising their codes. Oregon, Ohio and Kansas are also working on code revisions.

Established standards also have led the Federal Housing Administration to give the nod to flexible polyethylene. The pipe may be used in properties approved for FHA mortgage insurance, but FHA prescribes the following: Pipe must have the NSF seal, comply with the applicable standards, and be used for cold water service outside foundation walls.

Reputable manufacturers regularly recommend caution in selecting plastic pipe. As an infant, the industry was not without its growing pains. Makers were sometimes unsure of the limitations of their product's properties, and users often did not understand the pipe's limitations. True too, some irresponsible manufacturers offered an inferior product at bargain prices. Not surprisingly, there were failures that discredited the materials.

Constant research, standards and a campaign to educate users has reduced the possibility of failure. However, plastic pipe is not a substitute for sound engineering sense in writing specifications.



An uninformed public can spell trouble for road planners . . .

To Save Trouble: Let the People Know

How do you stage a smooth, trouble-free public hearing for a $150-million expressway to pass through industrial, business and residential areas in the heart of one of the nation's largest cities?

By combining the public hearing with a full-scale public relations effort, says the Michigan State Highway Department. The Department recently conducted such a public relations attempt at a hearing in which more than 2,200 people took part.

The new route will be the Fisher Expressway from Southwest Detroit to mid-city. Fifth of its kind in Detroit, it should be open to traffic in 1966.

AERIAL PHOTOGRAPHS of proposed route draw interested property owners.

After two years of study and planning by the State Highway Department, the Wayne County Road Commission and the City of Detroit, at a cost of $140,000, the state was ready to make its recommendations to the public. Conclusions of the study were published in a 64-page report to which was added three statistical tables and 19 right-of-way maps.

At the hearing the director of the City Plan Commission discussed the proposed route, and an officer of the real estate division of the County Road Commission explained methods used to acquire right-of-way and the manner in which compensation would be determined.

Others explained the need for expressways in terms of fatality rates on major motor routes, economic and health considerations.

The right-of-way will require demolition of 1,478 single-family homes, 476 multiple-family dwellings, 305 commercial buildings, 33 industrial structures and 43 institutional buildings.

A State Highway Department spokesman said after the hearing, "We frankly admitted that there is no such thing as a perfect route, that we were faced with choosing from several alternatives, none of which was perfect. We explained that we had spent a lot of time making decisions, gave the facts and the problems we faced and the reasons for deciding the way we did.

"We had prepared for the hearing by holding several pre-public hearings with city leaders, ministerial associations, newspapers, school and business leaders," he added. "We decided on a single recommendation for the route and saw that it had as wide a circulation as possible, aiming to reach every one who had a legitimate interest in the project."

Focal point of the public hearing was 24 blown-up aerial views of the route that formed a map 168 ft long, at a scale of 40 ft to the inch. Every building along the route was easily identifiable; one look told property owners how they would be affected.

Eight hundred persons viewed the 4x7-ft photographs before the hearing began. Twenty-two hundred listened to the 1½-hour-long presentation. After the speakers finished, there was an intermission, followed by a question-and-answer session. About 800 persons stayed for the Q-and-A period. Only five had questions, and these concerned the formal procedures of right-of-way acquisition and time schedules.

Previous experience led to the intense public relations effort. Before the extension to the John Lodge Expressway (it's now under contruction) was approved, the department had to fence with businessmen and resident groups for nine months over the type of expressway to be built. The department finally compromised with the dissidents. Result: The road is not as attractive as Michigan road planners think it might have been, and it required more right-of-way than the original design.

Looking back on the experience with the Lodge Expressway, Michigan Highway officials think they could have had it their way if they gave the public enough information.

"Let's face it," an MSHD official said, "if these things can be approved before a battle develops, everyone is better off. We are proud of the way our study was done. As a result of it, there is every indication that the Common Council (Detroit City Council) will approve it in the next two weeks."

School Bill Moves

Senate passes it handily; close House vote seen

The battle over federal aid for construction of elementary and secondary public schools swung into the House of Representatives this week after the Senate passed by a 49-34 vote a $2.5-billion program giving the Administration even more than it asked for.

Approval of a similar bill by the House Education and Labor Committee by a margin of 18 to 13 last week set the stage for a knock-down fight in the House. Informed sources are predicting passage by a very close vote, perhaps a margin of five.

Proponents are encouraged, however, by the fact that so far the issues of aid to parochial and segregated schools have been kept out of it. Amendments seeking to exploit these issues have been defeated.

The Senate and House bills are not far apart, although the possibility remains that the House could eliminate the option for a state to spend the money for teachers' salaries as well as construction, making it a straight construction measure. Proponents of the bill assert that the option is necessary to attract enough votes from states that have kept up with their building programs on their own. The committee vote on the issue was along straight party lines, with Republicans trying to knock out salaries.

Democratic leadership in the Senate fought off 15 amendments and accepted only one of significance. That would allow the state to spend the funds for construction, salaries, or current operating expenses—in fact, anything except debt retirement.

The Senate bill provides $850 million each year for three years in grants. States do not have to match the funds, but must increase local efforts or lose some of the money. The House bill provides $720 million the first year, $828 million the second and $936 million the third for a total just $66 million less than the Senate.

The formula for allocating money to the states, which in turn distribute it to school districts, also differs somewhat. Both formulas are based on school-age population plus per capita income in the state. The Senate bill permits a range from $9.25 to $27.74 per pupil; the House bill $12 to $28.97. The effect is that the Senate bill favors the poorer districts in the South slightly.

The new program, if enacted, is expected to build from 40,000 to 70,000 more classrooms than would otherwise be constructed, depending on how large a share is devoted to teachers' salaries instead of construction.

Around the Country . . .

• **Difference of opinion**—Massachusetts' Gov. John Volpe last week backed construction of a freeway into Boston instead of an extension of the Massachusetts Turnpike. At the same time he rejected a Turnpike Authority plea that he ask the legislature to raise the interest ceiling on Turnpike bonds from 5% to 5½%. The authority, however, will try a second time to sell $177 million worth of bonds for the project.

• **USC expanding**—University of Southern California, Los Angeles, plans a $106-million expansion within the next two decades. Included are 11 new buildings on the midcity campus, which will be increased from 78 to 138 acres.

• **Shipping, not swimming**—The Indiana Port Commission has approved a Porter County site for an $80-million deep-water port. Conservationists had asked Congress to make the area a national park.

• **San Diego's tallest**—A 24-story office tower, part of San Diego's Center City development, will top all other buildings in town. The lowest six floors and two underground levels will park 250 cars. Architects are Palmer & Krisel of Los Angeles; general contractor is Peter Kiewit Sons Co.

• **You're good for ten years**—The employed engineer who graduated a decade ago is obsolete, says Chester J. Kishel, head of the industrial engineering department of Cleveland's Fenn College. New engineers command high salaries because older engineers can't keep up, they would have to spend 30% of their time just studying new developments to stay current, he says.

• **While the building is good**—The State Highway Commissions of Wyoming and Utah have asked Congress to appropriate $5 million to build a bridge over the reservoir that will rise behind the Flaming Gorge Dam in 1962. Under construction since 1958, the dam over the Green River will be the seventh largest in the U. S. The Commissions say work on the bridge must start before water storage begins.

• **Passing the buck**—Deer die by the hundreds every year on Michigan highways when they collide with automobiles. The accidents also cause millions of dollars of damage to cars. Hoping to solve this problem, Michigan asked other states how they handled it. New York said fences didn't work. Pennsylvania doesn't try to prevent deer crossing. California suggested building underpasses for them.

CSI Plans Aid to Spec Writers

The Construction Specifications Institute launched a program of increased technical activities at its annual convention last week in New York City. To back up the program, the specification methods committee proposed a manual for the writing of specifications.

The stepped up areas of activity include liaison with public authorities and private industries, more stress on teaching specifications writing, creation of a library of specification data and a study of the tentative manual of specification writing—with a view toward adopting it as a CSI standard.

The new manual of practice outlines the techniques, language and arrangements to be used in writing a book of construction documents. According to the proposed format, bidding documents, contract forms and specifications should all be bound in one book.

Because the standardization committee believes that the whole construction industry will benefit from better written specs, copies of the proposed methods and a sample application (for construction of an office building) are available to anyone interested in reading or commenting on them. Cost of each book is $3.00. Address requests to: The Executive Secretary, The Construction Specifications Institute, 632 Du-Pont Circle, Washington 6, D. C.

After a heated discussion, CSI members defeated a motion that would have opened the way for official CSI action for or against local and federal legislation. The "nays" won by a margin of one vote, arguing for concentration on technical matters.

There was no argument—but total agreement—on the need to inform manufacturers about specification writers' needs. Less consumer appeal and more technical information is what CSI members want manufacturers to supply.

James C. Bort, of Smith, Garden and Erikson, Chicago, is the newly elected president of CSI.

Curvaceous Twins Go Into . . .

. . . California Road Interchange

Final structural links in the Pasadena-Golden State freeways interchange in Los Angeles are curving twin steel girders that are 90 ft long and weigh 34 tons.

California Division of Highways engineer Wendell Pond says steel was chosen for the unusual girders because of the long span needed to cross the Arroyo Seco flood control channel. Falsework would have blocked the floodway.

"The curving design is not only more pleasing to the eye than a combination of short tangents," says Mr. Pond, "but permitted economies in the deck system by keeping overhangs uniform over the length of the curve."

General contractor on the project is Vinnel Constructors, Alhambra, Calif., who used two truck cranes to erect the girders. The structural members were fabricated in Kaiser Steel's plant at Montebello.

Private Enterprise?

Sure — but on city time, with city employees?

The city engineer of Independence, Mo., has been running a private surveying company—on city time, with city employees, and using city equipment.

The engineer, Robert B. Waddill, submitted his resignation last week after his operation was uncovered by the Good Government League, a reform group, and the St. Louis Post Dispatch.

Mr. Waddill's city job pays $525 a month. His private enterprise, Queen City Engineering and Surveying Co., earned a net profit of $36,000 in 1959 and $24,000 up to Dec. 1, 1960, according to an Independence city councilman.

Here's the story as told by Donald W. Sarratt, a former partner in Mr. Waddill's firm, and Allen V. Young, a former employee:

When Mr. Waddill hired employees for the city engineer's office, he did so with the understanding that they would also be working for his private company. It was a convenient arrangement, since the private firm primarily did plotting in housing subdivisions for which the city engineers laid out sewer lines, planned sewer construction and so forth.

Said Mr. Sarratt: "Until a short time ago, if you walked into the city engineer's office, you would have found practically nothing but work for the surveying company on the desks."

Said Mr. Young: "A conservative estimate of the time spent by these city employees is 10% on city work and 90% for Waddill's company." Mr. Young, who said he "got sick of the whole operation," resigned from city employment and Mr. Waddill's firm in 1959. He is now chief engineer for Andes and Roberts Bros. Construction Co.

The two former city-Waddill employees said the private firm used large quantities of city property—steel and wooden stakes, drafting paper, reproduction paper, drafting equipment and surveying instruments.

In his own defense, Mr. Waddill makes these points.

- The city could obtain competent personnel at the salaries offered only by making an arrangement that would permit them to earn additional money.
- City work came first. Such work was always finished before private work began.
- The men working for the company used their private cars for the city.
- The Mayor of Independence knew of the arrangement and "never objected to it."

immediate protection against roadside erosion...

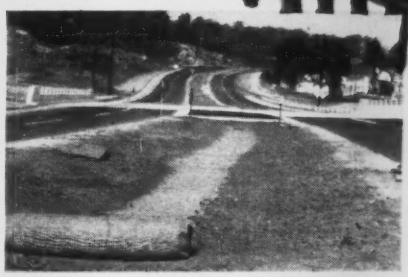
SOIL SAVER

Each day, erosion from rain and water run-off cuts into the highway investment of every state. If you share in the responsibilities of highway planning, building and renewal, then erosion, its defeat and prevention, is your concern. You, of all people, should know about Soil Saver.

Soil Saver is a heavy jute mesh. It is simple as dirt, and almost as cheap! It costs, in fact, some 75% less than sod, and 1400% less than asphalt or concrete paving. Wind, water or growing grass cannot displace it. Many leading state highway design engineers across the nation now include it in their original specifications. They have seen how it protects seed and soil in critical areas until grasses take over.

Soil Saver belongs in your plans. Get the facts . . . write for full details to Dept. EN-61.

LUDLOW TEXTILE PRODUCTS
NEEDHAM HEIGHTS 94, MASS.
A Division of Ludlow Corporation



ABOVE: Soil Saver applied to critical center of steep grade median strip. **BELOW:** Stabilizing grass growing through Soil Saver heavy jute mesh.

Ludlow

SOIL SAVER
Heavy Jute Mesh
SIMPLE AS DIRT AND ALMOST AS CHEAP

Ghana's 370-ft-high Akosombo Dam starts next month as . . .

Volta River Hydro Gets Rolling

Construction begins next month on the $168-million Akosombo Dam and Powerhouse—biggest of three planned for Ghana's Volta River Hydro Development. Ghana's President Kwame Nkrumah has announced award of a $44.8-million contract to Impresit-Girola-Lodigianai and E. Recchi, Milan, for the 370-ft rock-fill dam, the powerhouse and appurtenances.

The Akosombo site is about 68 miles northeast of Accra, the capital, and 70 river miles up the Volta from the Atlantic Ocean. The 2,100-ft-long dam will back up the waters of the Volta nearly 200 miles.

Some of the 120 million acre-ft of water behind Akosombo Dam, will at first turn four 128,000-kw turbine-generators. The outdoor-type powerhouse will have two extra penstocks for future expansion to an ultimate capacity of 868,000 kw.

The contract also covers construction of a 120-ft-high saddle dam near the 10.9-million-cu-yd main embankment and two uncontrolled spillways with concrete crests.

Kaiser Engineers International, Oakland, Calif., consultants on the Akosombo project, have been at work in Ghana for several months under the terms of a $10.6-million contract covering design, preliminary engineering and site preparation. Kaiser also will procure equipment and inspect construction.

The Italian consortium, which also built Rhodesia's Kariba Dam, was low bidder among some construction giants. The other bidders were: a consortium, Morrison-Knudsen-Taylor Woodrow and Associates, a group of U. S., British and African companies including Morrison-Knudsen, Boise, Idaho, and Volta International Contractors, another consortium of companies from the U. S., Britain, Denmark, Italy, and France. Included in the Volta group were Johnson, Drake and Piper, Inc., New York, and Nello L. Teer Co., Durham, N. C.

The Akosombo project is a key part of the three-dam Volta River Development.

Rumors are flying, mostly in Ghana, that Soviet engineers either have designed or will design and possibly build the second dam of the three at Bui Gorge, upstream on the Black Volta. The Bui project was included in an earlier master plan for future consideration when additional power was needed. The Ghanaian government has made no statement concerning Bui Dam, but a $40-million technical assistance loan was negotiated with the USSR last year.

The Ghanaian government in April reportedly invited the director of Brazil's Companhia Hidroeletrica de Sao Francisco (CHESF), Carlos Berenhauser, to plan and build a third Volta River power plant. Reported to ENR as a nameless $200-million, 600,000-kw plant, this could be the Kpong low-head dam and powerhouse downstream of Akosombo. The Kpong plant was also part of the over-all Volta development first proposed in 1958.

A bid call was announced last month for both electrical and hydraulic equipment at Akosombo. Included are turbines, generators, penstocks cranes, gates and construction of transmission lines. Bid opening is September 5.

A prime consumer of Akosombo power will be the proposed aluminum smelter to be built at Tema by Volta Aluminum Co., Ltd., a consortium of three U. S. aluminum producers—Kaiser Aluminum and Chemical Corp., Reynolds Metals Co., and Olin-Mathieson Chemicals Corp. A Ghanaian delegation arrived in Washington last week to iron out political snags that up to now have delayed financing for the smelter.

About half of the funds for the Akosombo project are also involved in this week's negotiations. Over $80 million in Ghanaian appropriations will cover the Akosombo contracts already awarded and up for bids now. Power rate squabbles that threatened to bog things down last summer (ENR Aug. 25, 1960, p. 82), have been settled.

Ultimately a transmission loop will link all three hydro plants and the aluminum plant.

Tossed Coin Costs Builders Right to Bid School Jobs

A toss of a coin proved expensive for two large New York City contractors, even though one netted a $1.43-million school contract, the other a $10,000 consolation prize. It has resulted in both being barred from bidding on schools in New York City.

Here's what happened: In 1959 Caristo Construction Corp., and Mars Associates & Normel Construction Corp. submitted identical bids at $1.43 million for construction of P. S. 203 in Queens. A Board of Education representative agreed that the contractors could settle the matter by tossing a coin. The winner of the toss was to get the job and the loser to get a $10,000 consolation prize from the winner.

Caristo won. The school board, learning of the toss—but not of the prize money—protested the procedure as improper and drew names. Again Caristo won. He was awarded the construction contract and completed his work ahead of schedule.

However, a recent check by city and state investigating agencies, called attention to the prize money deal, which no one had attempted to conceal.

Now, although the contractors defend the procedure as common and perfectly legal and the school board won't say it is illegal, the board has refused to accept any further bids from the two companies.

Bid Rigging Charge Stands Against Five Contractors

Executives of five large New Jersey construction companies will have to stand trial on charges of rigging a $5-million public bid.

The New Jersey State Supreme Court last week refused to quash without trial a two count indictment charging them with conspiring to enter into collusive bidding and with conspiring to obtain money under false pretenses in connection with a contract with the Passaic (N. J.) Sewerage Commission.

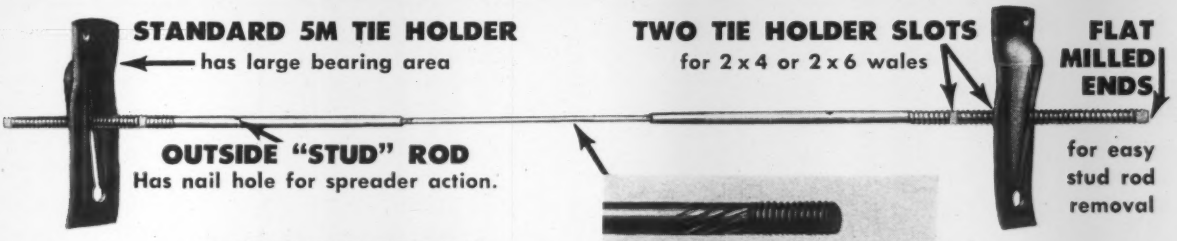
The men who will stand trial are Richard N. Dinallo, president of Terminal Construction Corp.; Wilbur M. Blauvelt, vice president of George M. Brewster & Son, Inc.; Phillip R. Salvatore, partner, C. Salvatore & Sons; Anthony P. Miele, vice president of Joseph Miele Construction Co., Inc.; and Joseph LaFera, president of LaFera Contracting Co.

The indictment charges that in response to a call for competitive bids issued by the Sewerage Commission, Brewster and Terminal submitted rigged bids that made Brewster low. Brewster then assigned the contract to a joint venture comprised of the five firms.

SUPERIOR'S NEW COMPACT, ECONOMICAL FORM TIE

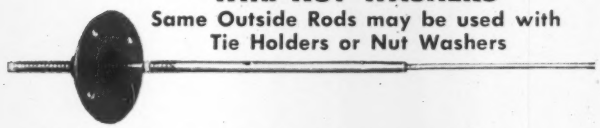
"SUPERTIE" Assembly

with Tie Holders or Nut Washers


STANDARD 5M TIE HOLDER
has large bearing area
TWO TIE HOLDER SLOTS
for 2 x 4 or 2 x 6 wales
FLAT MILLED ENDS
for easy stud rod removal
OUTSIDE "STUD" ROD
Has nail hole for spreader action.

With NUT WASHERS

Same Outside Rods may be used with Tie Holders or Nut Washers



The Superior SUPERTIE Assembly consists of two outside rods, two standard 5M tie holders, or two nut washers. Together with the high-strength Inside Tie Rod (SUPERTIE), this compact assembly offers great economy and versatility over conventional tieing systems. The Outside Rod will accommodate either tie holders or nut washers on 2 x 4 or 2 x 6 wales. For easy removal the ends of the Outside Rod are flattened. Another feature, the nail hole, provides for fast and convenient form spreader action. Only the SUPERTIE, left in the concrete, is lost . . . the working parts of the assembly are reused again and again.

The Inside Tie Rod (SUPERTIE) is the KEY TO THE ECONOMY of this system.

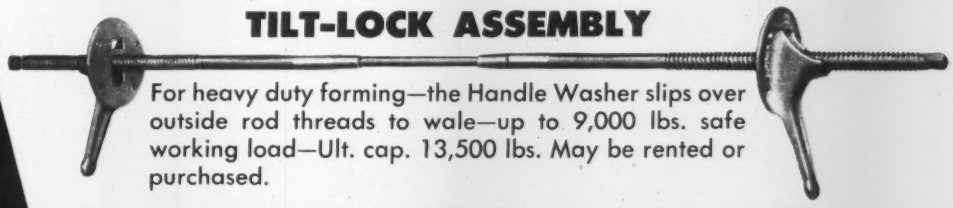
There is no excess material. Has a fast double-lead thread for connection to outside stud rods—only 5 turns for full engagement.

Rented With Option to Purchase

This tie system has been designed for compactness, all excess weight and bulk have been eliminated, yet it has a Safe Working Load of 5,000 lbs. (7,000 lb. ultimate capacity.) *Write for Bulletin SA-1.*

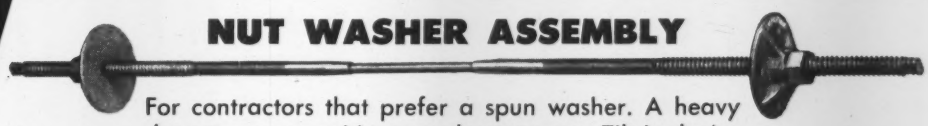
SUPERIOR Heavy Duty Form Tie Assemblies

TILT-LOCK ASSEMBLY



For heavy duty forming—the Handle Washer slips over outside rod threads to wale—up to 9,000 lbs. safe working load—Ult. cap. 13,500 lbs. May be rented or purchased.

NUT WASHER ASSEMBLY



For contractors that prefer a spun washer. A heavy duty type—capacities are the same as Tilt-Lock Assembly above. Also rented or purchased.

SUPERIOR Concrete Accessories, Inc.

9301 King St., Franklin Park, Ill. *(A Suburb of Chicago)*

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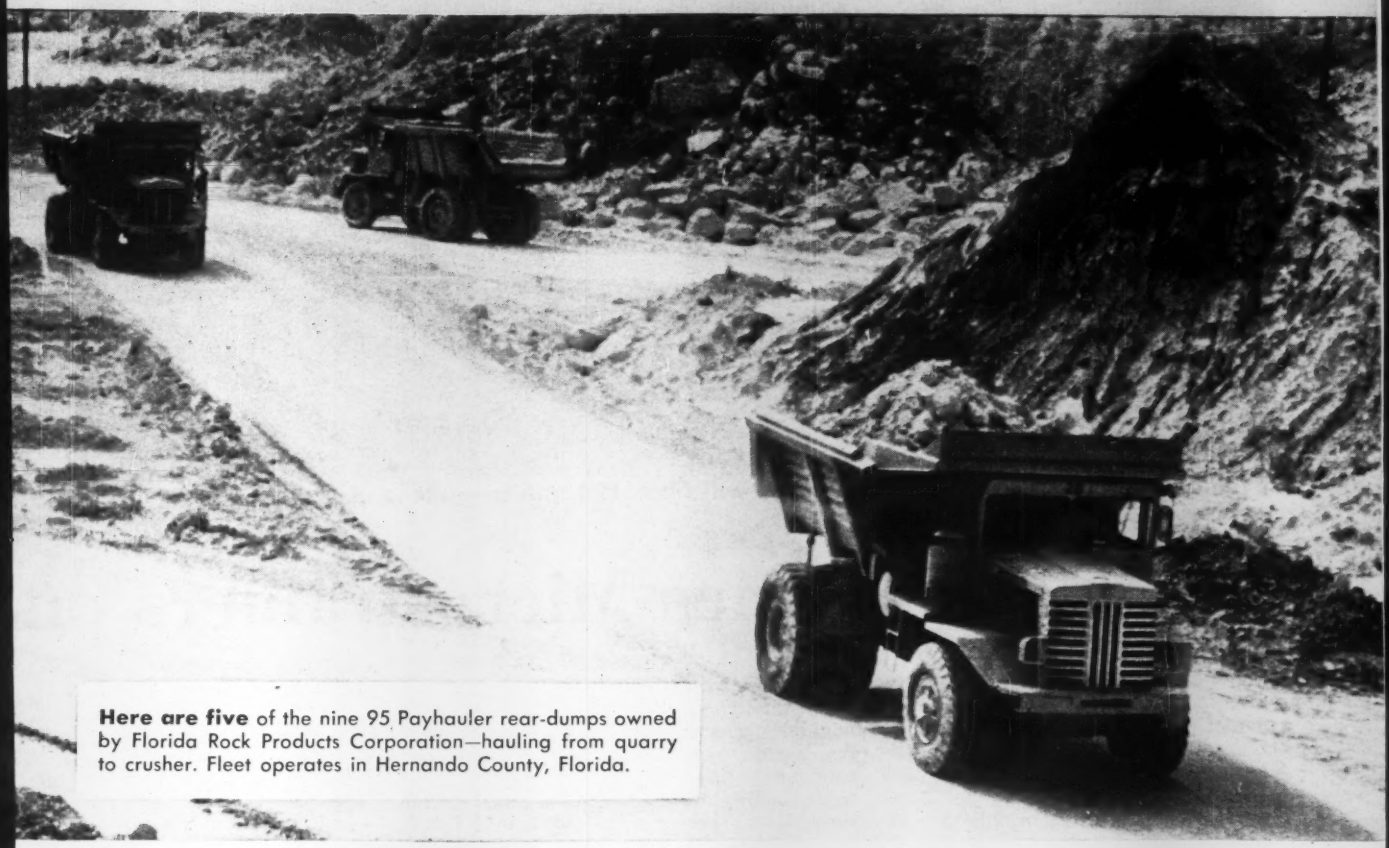
Nine-Unit Payhauler fleet *serves*

Eleven-second dumping with positive power-up, power-down control of body action is provided by the inverted, double-acting hoist system as furnished by International. For similar all-around cycle-speeding advantages in a 19-tonner, see the 65 Payhauler!

Florida Rock Products Corporation



Here are five of the nine 95 Payhauler rear-dumps owned by Florida Rock Products Corporation—hauling from quarry to crusher. Fleet operates in Hernando County, Florida.

"Our Payhauler units are doing everything we expected of them—and are performing very satisfactorily."—T. S. BAKER, *President*
Florida Rock Products Corporation

Florida Rock Products Corporation moves rock from quarry to crusher with a fleet of nine International Model 95 Payhauler rear-dumps. Payhauler offers an exclusive combination of capacity-adding, cost-reducing features of special appeal for tough, heavy, off-road mine and quarry hauling.

Of all 27-ton off-road haulers, only the 95 Payhauler gives you the ton-shedding, brawn-boosting advantages of the rock-ribbed corrugated body. Only the "95" is plus-powered by the 375-hp DT-817 turbocharged International diesel engine. Choose the "95" with power-shift torque converter or 9-speed air-shift transmission.

Grade charts prove that the "95" Payhauler is in a class by itself for upgrade hauling—giving a speed advantage of up to 44%! Compared to 27-ton competitors, only the "95" is "one hand" power-steered with International's high-leverage enclosed system—or is quick-dumped (in 11 seconds) with power-up, power-down inverted hoist action.

See for yourself in your own off-road hauling how an International Payhauler can increase your capacity, and give you record economy. Let your International Construction Equipment Distributor demonstrate.

International®
Construction
Equipment

International Harvester Co.,
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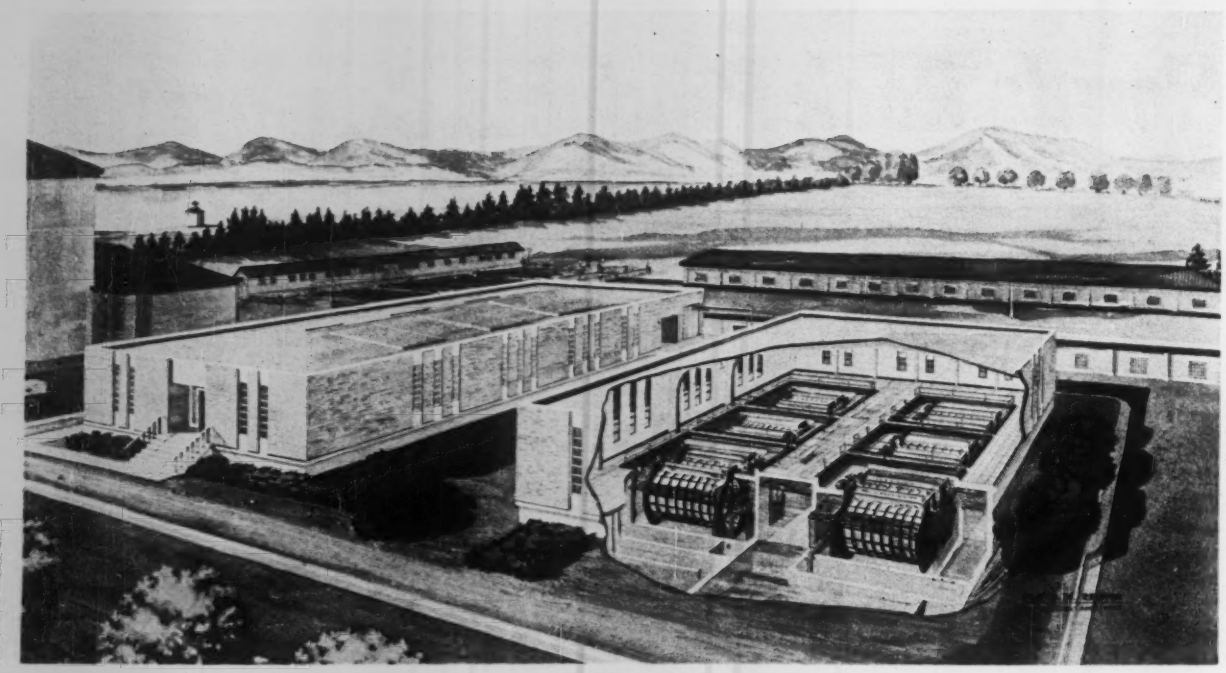
A COMPLETE POWER PACKAGE



Eventually, microstrainer plant in Denver will filter 120 million gallons of water a day.

Denver Tries Microstrainers on

Denver is building a municipal water filtration plant that will eventually be one of the biggest using microstrainers. Capacity at first will be 60 million gallons a day (mgd). It will be doubled later.

Each half of the plant will have 12 revolving microstrainer drums, 10 ft in dia and 10 ft long. Wire mesh covering the cylindrical surfaces will have openings about 23 microns (nearly 0.001 in.) across. With this fine fabric as the filter medium, the strainers can filter out about 95% of all solids suspended in the water.

• **Why microstrainers?**—The Denver Water Board chose the relatively unusual (only seven others like it in the U. S.) purification method for several reasons, including the peculiarities of the raw water, low first cost of the plant and comparatively small space needs.

Two years of tests on a microstrainer, 7½ ft in dia and 5 ft long, proved that the method is well suited for the Denver application. Mr. George Turre, the board's sanitary engineer, supervised the tests. The raw water, from Marston Lake, is low in turbidity but requires the removal of suspended solids —mainly plankton—which thrive in the clear water. The test unit removed about 95% of these solids. It removed only about a third of the turbidity, but initial turbidity is so low that the low removal efficiency is insignificant. Besides, the microstrained water will be combined with conventionally filtered water before distribution. The final turbidity is expected to be well within the 10-ppm limit of the Public Health Service Drinking Water Standard.

The new plant costs only a fraction of what a rapid-sand filtration plant would cost. The first half will cost about $1.4 million—some $23,000 for each million gallons per day of capacity.

Space savings are also cutting the first cost. The entire 120 mgd plant will occupy less than a third of an acre. Rapid sand filters would require more than twice the space.

Operating costs are also low. The microstrainers are simple to operate. The crew now working at an adjacent filter plant will be able to man them. Electricity required to power a 4-hp motor on each microstrainer is negligible when compared with the amount of water treated. Wash-water consumption is low—somewhere in the range of 1% of the total water treated. Only small amounts of chemicals are needed. Based on operating experience at other microstrainer installations, operating costs are expected to run under $3 a million gallons.

The plant will be used to meet peak summer loads and to supplement other plants in the Denver system when water begins to flow from the Blue River through the 23-mile Harold D. Roberts Tunnel sometime in 1962.

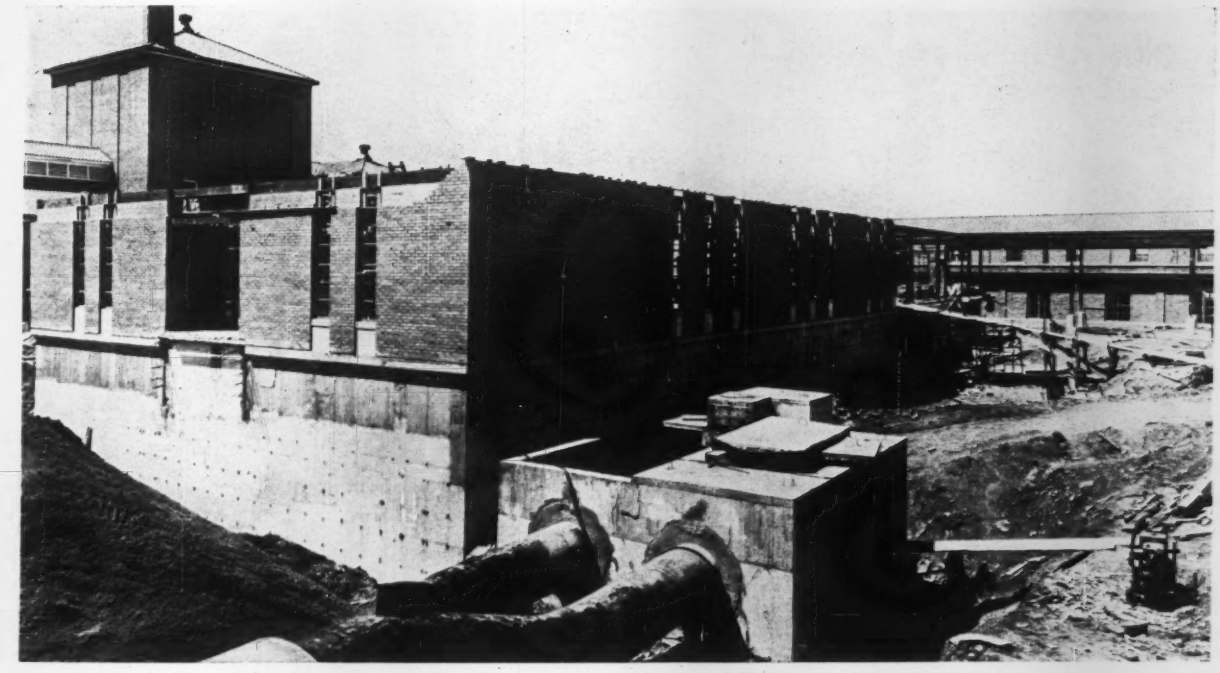
• **Operation starts this summer**—The 12 units are already in the pits and should be ready to begin operation this month.

Builders are now working on the filter house for the first 12 microstrainers at Marston Lake. A conventional masonry and concrete structure, it will enclose six concrete tanks, about 27 x 17 ft in plan, each accommodating a pair of microstrainers. Raw water entry into the building will be governed by a 42-in. butterfly valve from the control panel. Inflow into the individual tanks will be controlled by 4x4-ft slide gates.

Automatic controls will cut off flow into the building if a microstrainer clogs and raises the water level in the influent channel. Microstrainer controls will be provided both at each unit and at a remote location.

Also included will be two ammonium sulfate chemical feed machines and three chlorination machines.

Three vertical turbine pumps will bring wash water to the microstrainers



One half of filtration plant is now under construction. It will house 12 microstrainers.

Its Water

and a fourth will handle waste water. Each pump will have a 600-gpm capacity at 120 ft total discharge head.

• **Head loss is low**—Raw water enters the microstrainer drum under an open gravity head through a spoked endplate. The drum's other endplate has no openings. Both frames are fixed. The drum, three-fifths submerged, rotates at varying speeds, depending upon the quality of the raw water. Filtered water leaves the drum, with no appreciable loss of head, through the mesh, leaving behind most of the suspended solids, plankton and the like. The inside surface of the mesh collects these solids as a mat or schmutzdecke. The mat partly closes the apertures, making them still smaller, thus trapping additional solids that might otherwise get through.

• **Mesh is jetted clean**—To remove the trapped material and clean the mesh, wash jets shoot a continuous stream of water down on the unsubmerged part. The solids are washed into a hopper funneling into the drum's hollow axle which removes them from the unit.

Wash-water use, based on close study during the testing period, will amount to less than 2% of the total water treated. And since most of the water is recovered, only about 1% is wasted.

Occasionally, during periods of high algal blooms, the fabric can be blocked by overloading with bacterial or algal slimes. When this happens, wash-water pressure may be raised to as high as 30 psi. This failing, a 12-15% solution of sodium hypochlorite can be used to clean the fabric.

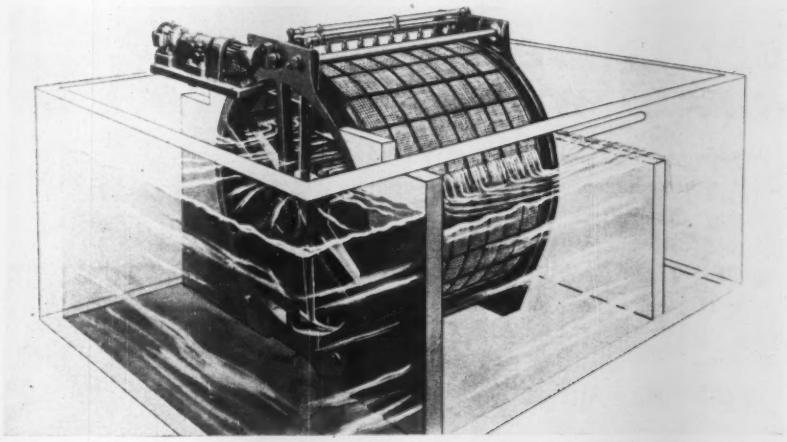
• **Sturdy construction**—The wire-mesh is woven stainless steel. The 23-micron openings are the finest used on microstrainers. Other installations use fabrics with openings of 60 and 35 microns.

A stainless steel screen supports the mesh and both are fastened to the cast bronze drum by monel straps and stainless steel screws. Stationary end-frames are metal castings.

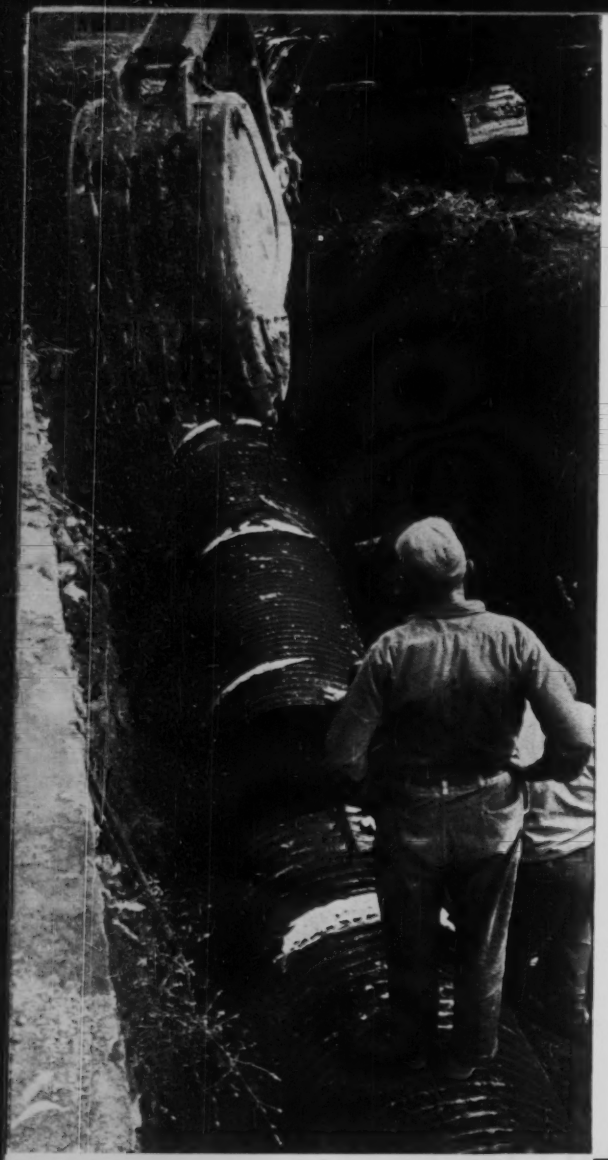
An adjustable, felt-backed copper band prevents leakage between the drum and end-frames.

The closed end of the drum is supported by a lubricated stainless steel bearing, the spoked end by a stainless steel trunnion bearing on the drum axis. The hollow axle spanning the two end-frames is drawn steel. The hopper, mounted on and opening into the axle, is galvanized steel.

Philips-Carter-Osborn, Denver, designed the installation. Westwood Construction Co., Denver, constructed the building and installed the microstrainers. Glenfield and Kennedy, Inc., Harrison, N. Y., supplied the microstrainers. Participating in the project for the Denver Water Board were R. B. McRae, Mark Barber, R. C. Panesi and K. A. Day.



Wire mesh on revolving drum filters out algae and solids.



Rugged corrugated Beth-Cu-Loy pipe can easily withstand this kind of treatment. With smaller diameters, Beth-Cu-Loy sections can often be man-handled.

No need to baby it when it's fabricated from Beth-Cu-Loy corrugated galvanized steel sheets

You don't have to be gentle with long lengths of Beth-Cu-Loy drainage pipe when you lay them in the trench. And you don't have to worry about curing and setting time when making field joints. Your trench doesn't have to be a featherbed, nor will you have a problem with grade and alignment.

STEEL IS IDEAL FOR FAST WORK

Drainage pipe made of Beth-Cu-Loy galvanized sheets has the strength, ruggedness, light weight, and flexibility of *steel*. Steel can take rough handling. Steel can flex to meet variations in grade and alignment. Steel can take traffic impact and vibration, and the shifting actions of soil in changing weather.

Standard connecting bands speed up job of field-joining long lengths of Beth-Cu-Loy drainage structures.

FIELD JOINTS QUICKLY MADE

With a Beth-Cu-Loy drainage pipe or culvert, field joints are quick and easy. You just slip a standard connecting band over the end of one pipe section, move the next section into place, then draw up the bolts on the collar of the band. Corrugations of the band nest perfectly with those of the pipe sections.

Bethlehem manufactures the Beth-Cu-Loy culvert sheets to meet the rigid specs of the AASHO. Your fabricator will be glad to give you full details on pipe made of Beth-Cu-Loy. If you wish, we will send you the name of a fabricator near you. Just drop us a line.

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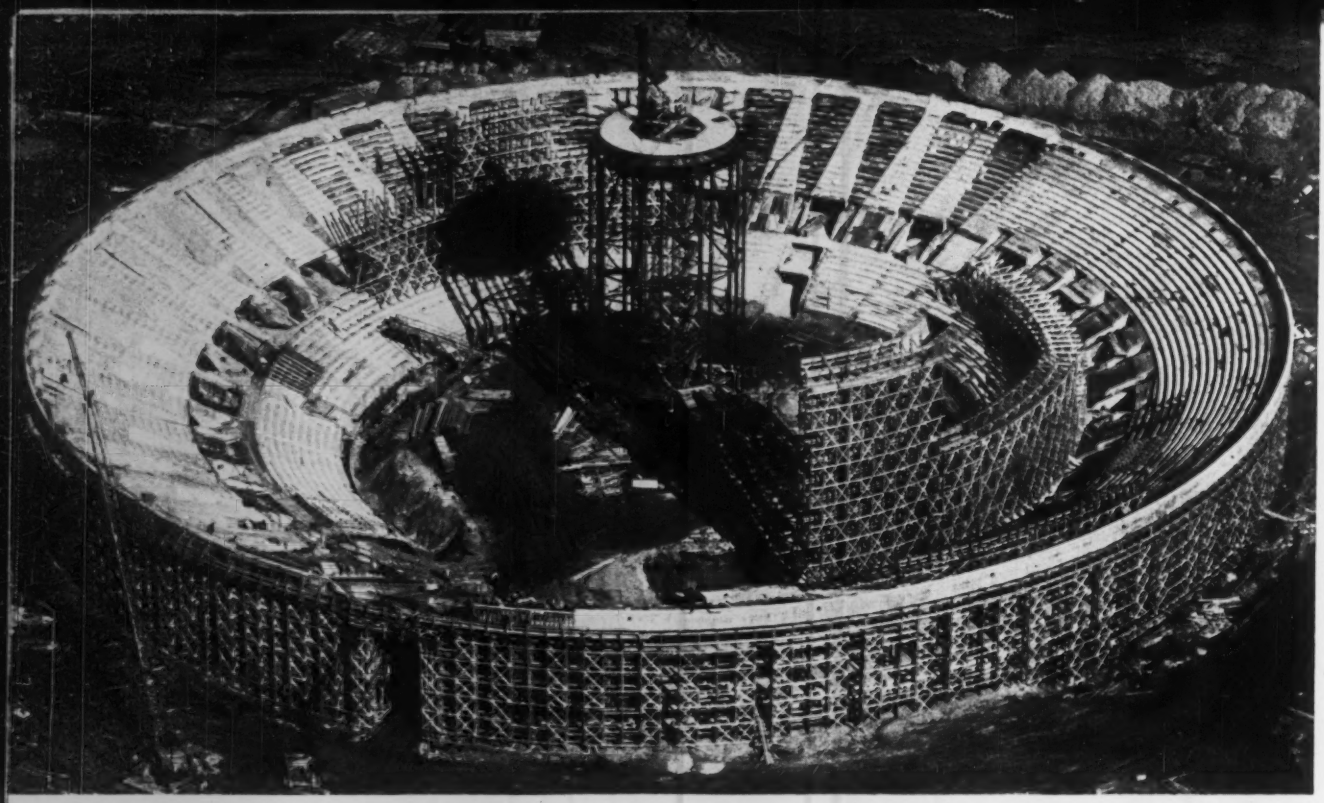


Falsework rises in mid-arena and in seating area to support dome falsework.

To Cover This Assembly Bowl:

One of the world's largest reinforced concrete roofs will cover a giant assembly hall—but without the aid of interior supports. The support comes from a post-tensioned reinforced concrete ring around the roof's periphery.

The structure, which looks like a bowl covered with a saucer, is now under construction for the University of Illinois at Urbana. It will be used as a theater and concert hall and for sports, such as basketball.

The circular reinforced concrete building squats under a 400-ft-dia folded-plate roof that arches to a height of 128 ft above the arena floor. The roof weighs 10.7 million lb. It has no windows, but some daylight seeps through 34 entranceways in the seating area. The hall will hold 16,200 permanent seats and 1,800 movable seats.

It will take 600 miles of 0.236-in. wire to post-tension the concrete ring supporting the roof. The wire will be stressed to an average tension of 150,000 psi. The ring rests on 48 reinforced concrete monoliths, or buttresses, equally spaced around the circumference of the building. These, in turn, sit on a continuous ring footing on a high-density, hard gray clay 15 ft below grade. The ring footing is 16 ft wide and 3.5 ft thick, with an inside radius of 109 ft.

The odd-shaped monoliths project outward from the ring footing to support the ring beam beneath the domed roof, which has a circular spring line 398 ft in diameter.

Nearly one-third of the seats are below ground level; you can get to any seat without a hard climb (the top row is only 36 ft above ground line).

• **Lightweight concrete**—The roof will be built of cast-in-place lightweight concrete, weighing about 105 lb per cu ft and having a minimum compressive strength of 4,000 psi at 28 days. Total rise from spring line to crown of roof is 62 ft. The folded-plate segments are on radial lines.

Segments of the dome reach a maximum depth of 7.5 ft; typical depth is about 3.5 ft. Ribs at valleys and ridges of the folded-plate segments taper from 10½x7½-in. to 15½x13½-in. sections. Their webs are connected by 3½-in.-thick reinforced concrete slabs. All webs are on a 45-deg angle.

The underside of the roof will be covered with 2-in.-thick wood-fiber-concrete panels for insulation and acoustics. The top of the dome will be waterproofed and weather-protected with three applications of a plastic material.

Casting the 2,880 cu yd of concrete in the domed roof starts this week or next, according to project manager Ray C. Dickerson, president of Felmley-Dickerson Co., the general contractor.

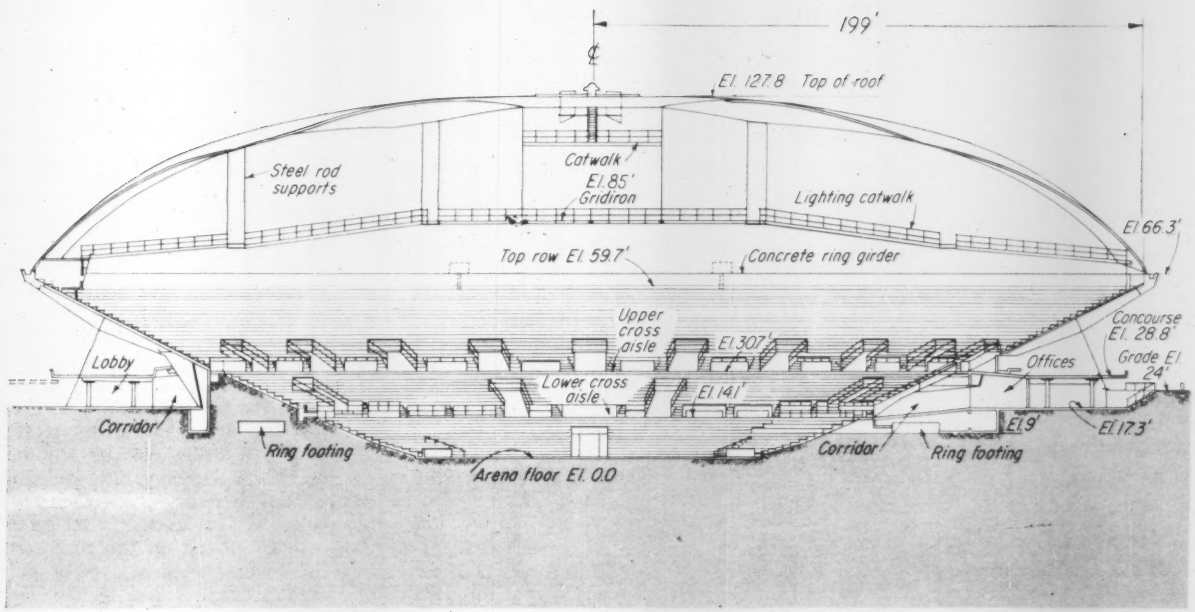
Construction during 1960 was concentrated on completing the 48 monoliths and their ring footing, casting the post-tensioning ring, and constructing the reinforced concrete slabs, columns and walls of the circular concourse and rooms on the lower level. (Labor strikes delayed the job five months.) Completion date is September, 1962.

During 1960 the contractor built the supporting slabs, treads and risers for half the seating area. He also erected a temporary steel tower to support the roof at its center.

Three crawler cranes erected the tower, excavated, positioned the forms, and handled the concrete and reinforcing steel. One mounted a 120-ft boom with 30-ft jib. The other two had 70-ft booms and 20-ft jibs.

Keystone of the roof construction is the 100-ft-high steel falsework tower at the center of the building. Designed to carry 3,000 kips it will form the central support of the roof until post-tensioning of the supporting ring beam is completed. At that time the total post-tensioning force is expected to lift the roof 4 in. clear of the tower.

Although the assembly hall extends into the ground 24 ft, the contractor



Dome of University of Illinois "bowl" rises 128 ft above the arena, which is 24 ft below grade.

A 400-ft Prestressed Saucer

elected to leave the central core of earth undisturbed until the roof is completed. At that time a 60-ft boom crane and trucks will remove this 17,000 cu yd of material through one of the entranceways. Total excavation for the assembly hall is 60,000 cu yd.

By leaving the core in place, the contractor provided more working area inside the circular seating area. He also saved 25 ft in the height of the temporary steel tower. The 16-ft-wide ring footing and buttresses were constructed in an open trench. The trench was backfilled to permit construction of the seat-supporting slab above it.

The roof will be cast in 24 segments of 15 deg. each. Segments opposite each other will be concreted in sequence to keep all vertical loads in balance. Each segment will be supported at five points during construction. These include the central tower, the post-tensioning ring and buttresses around the periphery, and a circular timber tower about 135 ft out from the center.

Open-web welded steel joists extending from the timber tower to the post-tensioned girder and the central steel tower will support the roof segments during construction. Two movable timber scaffolds, or travelers, at the midpoints of the 120-ft and 60-ft-span joists will provide the other two temporary supports for the roof segments while concrete is being placed.

The contractor ordered enough joists to support three pairs of segments (one fourth of the roof) at one time. And planning on three form re-uses, his carpenters fabricated form panels for the six roof segments.

The contractor plans to construct a pair of roof segments per week this spring and complete the entire roof in six weeks.

• **Fabricating the forms**—After six segments, covering one-fourth of the entire roof, have been completed, the joists and timber forms will be lowered onto carriers and re-erected for the next two half-quadrants. Workmen will use hand winches to move the forms, which must be lowered nearly 8 ft to clear the deep folded-plates of the roof.

Each segment measures 52 ft wide at the roof perimeter, and 6.5 ft at its junction with the central ring. Each segment contains 120 cu yd of lightweight concrete weighing about 105 lb per cu ft.

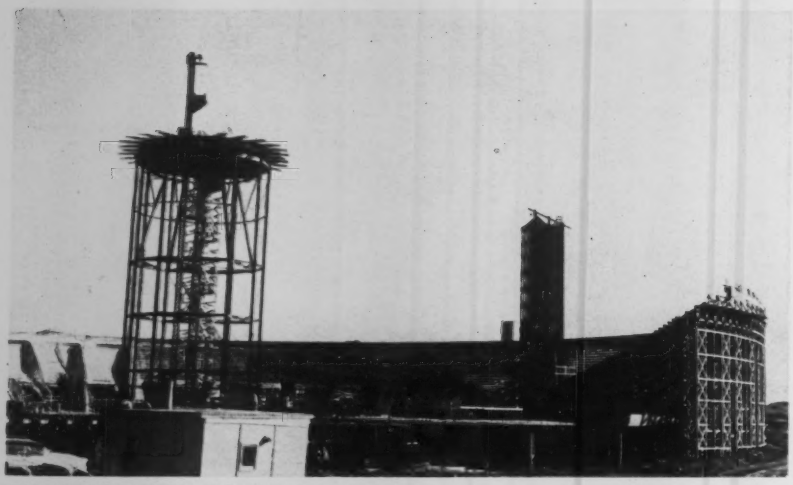
Shoring and formwork will require about 820,000 fbm of lumber and 150,000 sq ft of plywood, fabricated on the site. It includes concentric circles of timber towers to support the upper end of the monoliths and the reinforced concrete slabs spanning between and across the monoliths to carry the 16,200 permanent seats.

In fabricating the forms for the folded-plate roof, carpenters first bolt 2x4-in. nailers on the top flanges of the welded steel joists, which have a maximum depth of 54 in. Each segment is carried on 11 joists, with three joists carrying an 8-ft temporary catwalk along one side of two segments under construction.

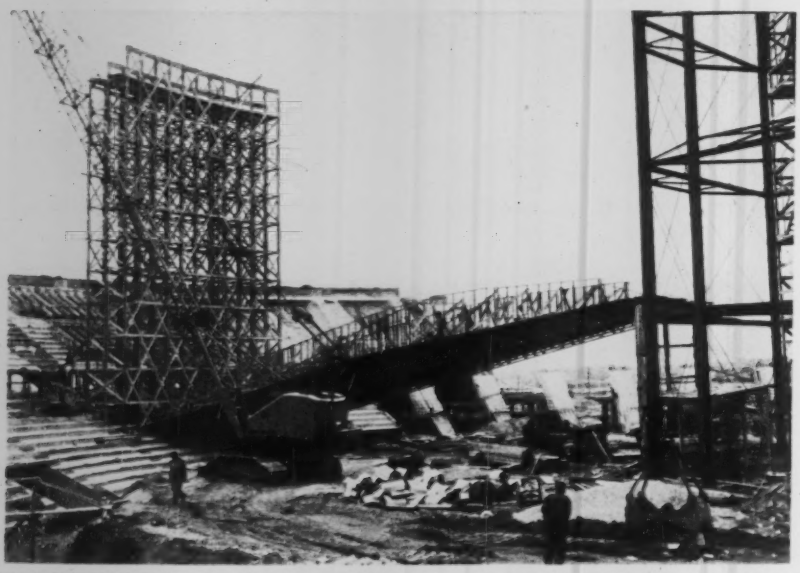
Timber decking, 2x10 in. with 4-in. openings between planks, are spiked to the nailers and covered with window screen to catch small tools and protect workmen below. Plywood forms and studs for the folded-plate elements of the roof are then cut to many shapes and miters and erected to a tailored fit, including the 2-in.-thick, hard-finished insulation material forming the under side of the dome. The concrete will be cast directly on this material, which will be anchored by small Z-bars embedded in the concrete.

Concrete for the roof will be hoisted by a combination of two methods—a ½-cu yd materials hoist in the temporary steel tower, and a crane with a 1-cu yd bucket.

(Please turn the page)



TEMPORARY STEEL TOWER rising 100 ft above the arena center will carry a 3-million-lb load before the dome's ring girder is prestressed.



TIMBER BENT (left) will assist the steel tower. Joists carrying dome formwork will span 120 ft between the two supports.

In the central area of the roof where it does not dip very fast, workmen may wheelbarrow the concrete into place. In the outer areas, where the roof becomes steeper, the contractor may hoist the concrete to a receiving hopper on the roof, then push it downhill into the forms through an 8-in. aluminum pipe, under compressed air.

Construction joints will be provided in the roof at intervals of 15 deg, radially. Total expansion and contraction of the dome is figured to be about 12 in. circumferentially and 4 in. radially.

A heavily reinforced central ring beam now in place on top of the tower will tie the twenty-four 15-deg segments of roof together to complete the dome. It is 4 ft thick, wtih a 21.5 ft ID and a 43-ft OD. It contains about 170 cu yd of lightweight concrete.

Lightweight concrete is also used for the slabs that carry the seats above and between the buttresses.

• **Control center**—A 50x90-ft gridiron suspended 85 ft above the area or main floor controls the placement of portable screens, a full-size stage and a demountable acoustical shell, to convert one quadrant of the hall for musical and theatrical productions.

Access to the gridiron is by two suspended catwalks extending to the sides of the building and about 8 ft above the top row of seats.

Encircling the building about 5 ft above grade is a glass and steel-enclosed concourse, 30 ft wide and about 1,100 ft long. It will provide display space for trade shows, science fairs and similar exhibits.

Space below the concourse will house offices, meeting rooms, reception facilities and serving kitchen, lounges and public restrooms, electric utilities and mechanical services.

Access to the seating areas is at two levels—14 ft and 31 ft above the arena floor. Spectators seeking the upper level will walk up 5-ft-high ramps from ground to concourse, circulate around the concourse and up 2-ft ramps through the dormitories and onto a circular aisle that serves steps leading to the seats, which are reinforced plastic.

Access to the lower level is similar, except that steps lead from ground level to the office floor, from which ramps lead down about 3 ft to the lower circular aisle. There are 10 entranceways from grade to the concourse and six to the office level. There are 34 entrances to the seating area.

Below ground level in the seating area, the excavation will be trimmed to proper slope and curvature, and compacted. A concrete slab-on-ground will be cast on a 6-in. layer of filter gravel, then will be placed on the compacted material covered with a layer of polyethylene material.

Treads and risers will then be cast on the slab.

The reinforced plastic seats will be bolted to the risers instead of sitting on the treads to permit easier cleaning of the spectator area.

• **Prestressing the girder**—The Preload Co. of New York City will probably post-tension the concrete ring girder this summer or fall.

The 598 miles of 0.236-in. dia wire for post-tensioning the beam will provide a total cross-section of 85 sq in. The wire will be wrapped around the circular beam 2,503 times, in 44 vertical rows. The first row next to the concrete will contain 77 wires; the outer row, 37. Steel bars 1¼ in. wide by ½ in. thick will be inserted between the vertical rows.

The 0.236-in. dia wire will be stressed to about 150,000 psi by forcing it to pass through a 0.208-in. dia. This will induce a stress in the edge beam of about 1,000 psi.

The wire-winding, or stressing, machine to be used for this job is similar to those used by Preload on prestressed concrete tanks or on some of the circular structures for the Titan Intercontinental Missile Bases. Powered by a 200-hp engine mounted on the deck of the unit, the rail-mounted machine will pull against an endless chain placed around the structure and run through a series of sprockets on the machine underside.

Two guide tracks set on a true circumference about 20 ft into the dome area will support the machine and hold

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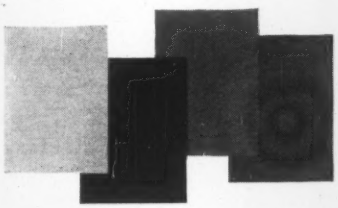

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Building up Seawall at Baltimore Marine Terminal. Contractor, Empire Construction Co., Baltimore

Symons Steel-Ply Forms Used in Tight Quarters

Three 6-foot-high walls, each 1200 feet long, with an additional 200 feet curved section at the outer end had to be formed within a working space of 39 feet, measuring inshore from the existing seawall.

Empire used Symons Steel-Ply Forms for the work which required perfectly aligned forms so that there would be no trouble when installing rails for the craneway. Some 6,300 feet of Symons Forms were in use at one time. Attachment was simple, and a minimum of skilled carpenter time was required for the work. All this eased the work of erection, stripping, and storage. The forms were particularly valuable in work on the tapering edge of the buildup on the seawall and the curving sections of the walls.

Symons Forms are rented with purchase option. Symons Clamp & Mfg. Co., 4265 Diversey Avenue, Dept. F-1, Chicago 39, Illinois.

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it on a true radius. One of these tracks will support a rigid structural steel shape fixed to the machine.

A cable tie-back running from the mast to the second track will serve as a safety anchor should the machine leave the ring.

One operator runs the machine after the wire is loaded onto it. It travels about 8 mph.

After the post-tensioning is finished, the voids between the vertical rows of stressing wires will be filled with grout. At the same time, a concrete covering beam and gutter will be cast-in-place around the periphery of the ring girder.

The auditorium will not be air conditioned but will be served by low-velocity, air-distribution type heating and ventilating systems. Offices and public rooms on the lower level will have hot-water radiation on exterior walls. Some will be air conditioned.

Indirect lighting will be used in the seating area. There will be a combination of fluorescent and mercury-vapor lights mounted on the catwalks and reflecting off the dome.

• **Concept change**—Development of the assembly hall began over 10 years ago. At that time Ernest L. Stouffer, university architect, conceived it as a huge rectangular structure, but extending well into the ground to save waste space and provide better accessibility.

The final design, as developed by Harrison and Abramovitz, New York architects, incorporated the principle of placing the arena floor below ground level, but calls for a circular structure to provide a minimum average sight distance for all spectators.

The multipurpose assembly hall, located just south of the University's Memorial Stadium, is designed to accommodate a variety of functions. In addition to basketball and other indoor sports events, the huge hall will handle conventions, convocations, theater, ballet and symphony. It is financed with a $7.75-million revenue bond issue, to be retired from student fees and revenues from building operations.

Assisting Mr. Dickerson in supervising the construction are Edward Maliskas, project superintendent, Richard Foley, vice president and office manager, and Edward Skoog, field engineer.

W. S. Posten is resident architect for Harrison and Abramovitz, and Owen L. Delevante is project manager. Syska & Hennessy, Inc., are consultants on the mechanical and electrical work. Ammann & Whitney are structural consultants.

Bethlehem Steel Co. fabricated the bar joists. The Mississippi Valley Structural Steel Co. fabricated the temporary steel tower which contains 120 tons of structural steel.

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And because New Haven's current redevelopment program puts special attention on the use of the best possible materials, coal-tar pitch built-up roofs are being specified for new construction and modernization.

Hundreds of Koppers Built-up Roofs throughout the country have already far outlived their 20-year guarantees. In many cases protection up to 40 years has been experienced.

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how Koppers products can also give you greater design flexibility because they protect the basic construction materials. And this greater flexibility and permanence are frequently possible with lower initial costs and lower maintenance cost.

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In Florida's Everglades if untreated wood doesn't rot, it's eaten by termites. But the architects wanted the clean look of natural wood for this pavilion at Caribbean Gardens, so the lumber was treated with a WOLMAN® preservative solution. In a large pressure vessel, air was drawn out of the wood cells and the WOLMAN solution forced in under high pressure. It *permanently* protects the wood from termites and decay; leaves no odor or discoloration. This WOLMANIZED® lumber can stand for decades. Check the coupon for complete information.

Donald E. Nick and Richard W. Morris, Architects

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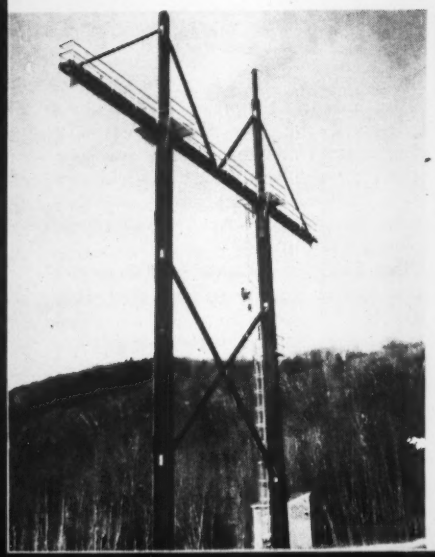
Koppers pressure-creosoted wood piling, permanent and economical, can safely support working loads of more than *40 tons per pile*. This is twice the maximum working load previously associated with wood piles, and makes possible significant savings in foundation construction costs. Recent tests in Chicago with pressure-creosoted wood piles show that 40-ton loads can be safely carried in Chicago-type soils. Loads considerably in excess of 40 tons per pile are possible under other soil conditions. Check the coupon for more information.



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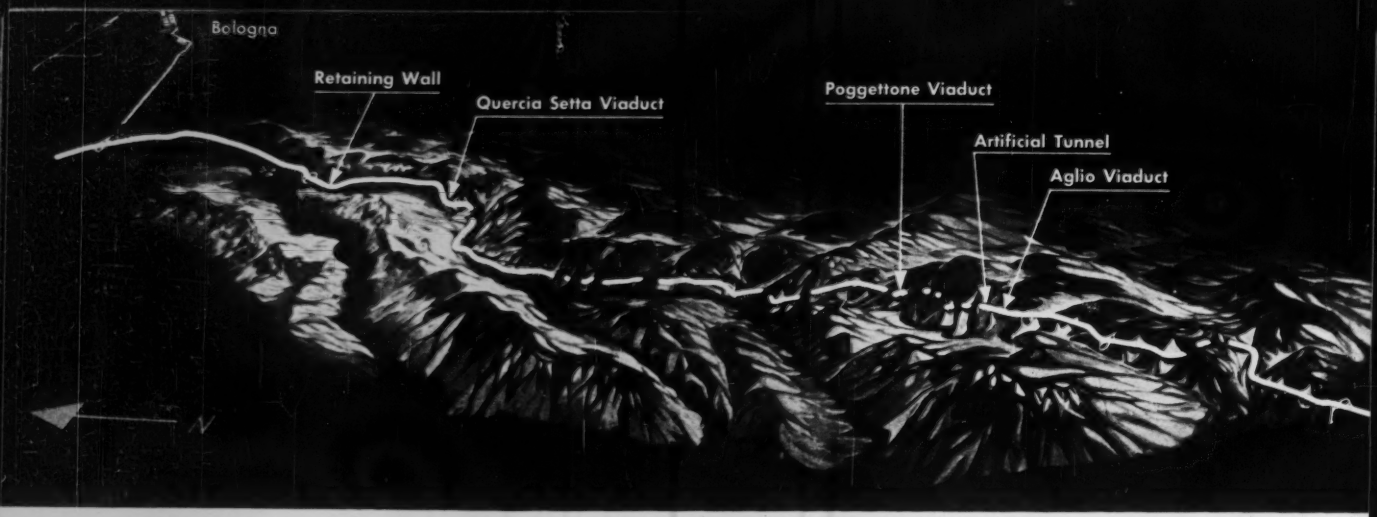
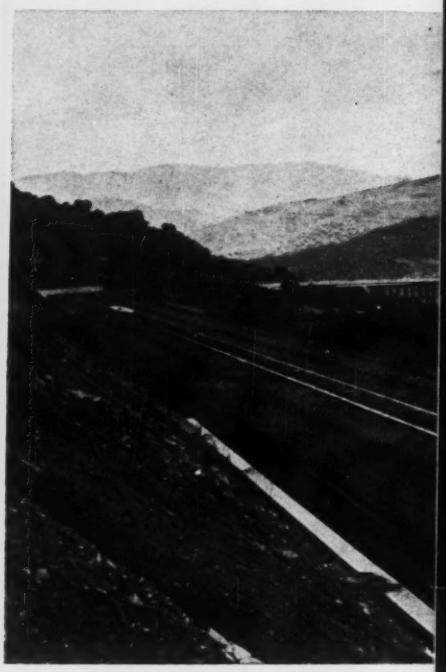
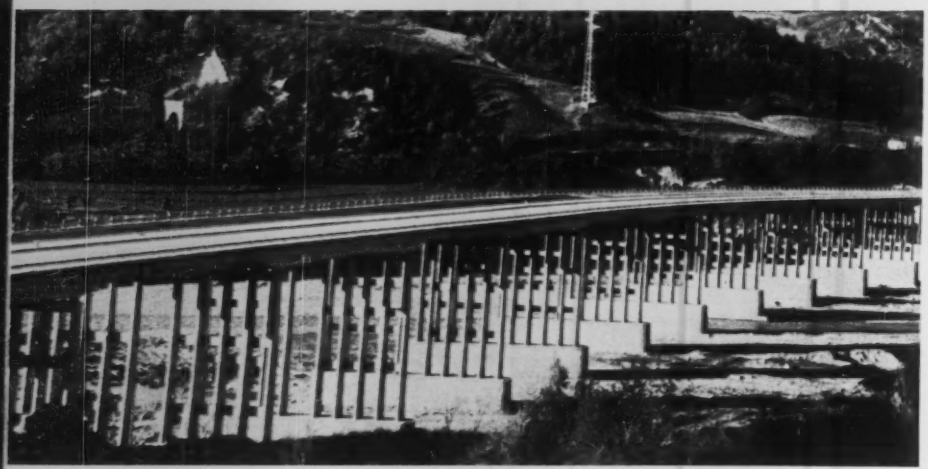


The Florence-Bologna section of the Highway of the Sun crosses the Apennines where the Apennines

Artificial tunnels are for landslide protection.



Aglio Viaduct has two 542-ft

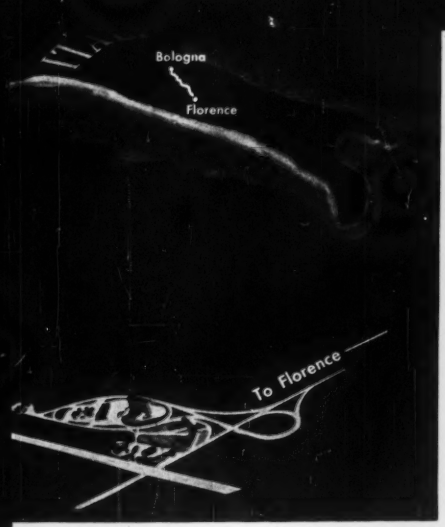


Quercia Setta Viaduct crosses a valley that carries torrential waters.

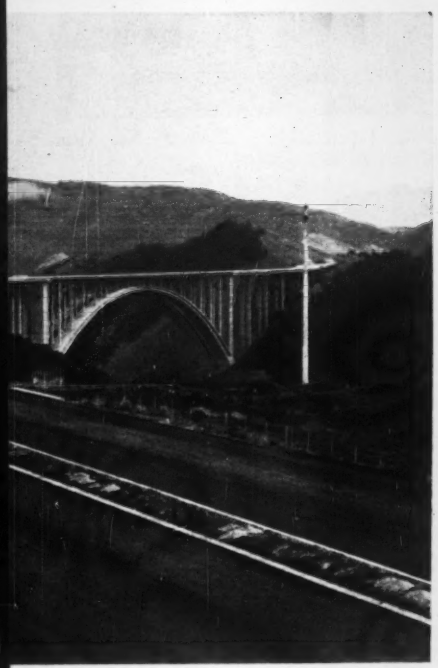
Structures

Any doubts that the roadbuilding abilities of the ancient Roman have been carried down to the modern Italian should be dispelled quickly by Italy's Highway of the Sun—and particularly its recently opened Florence-Bologna Section.

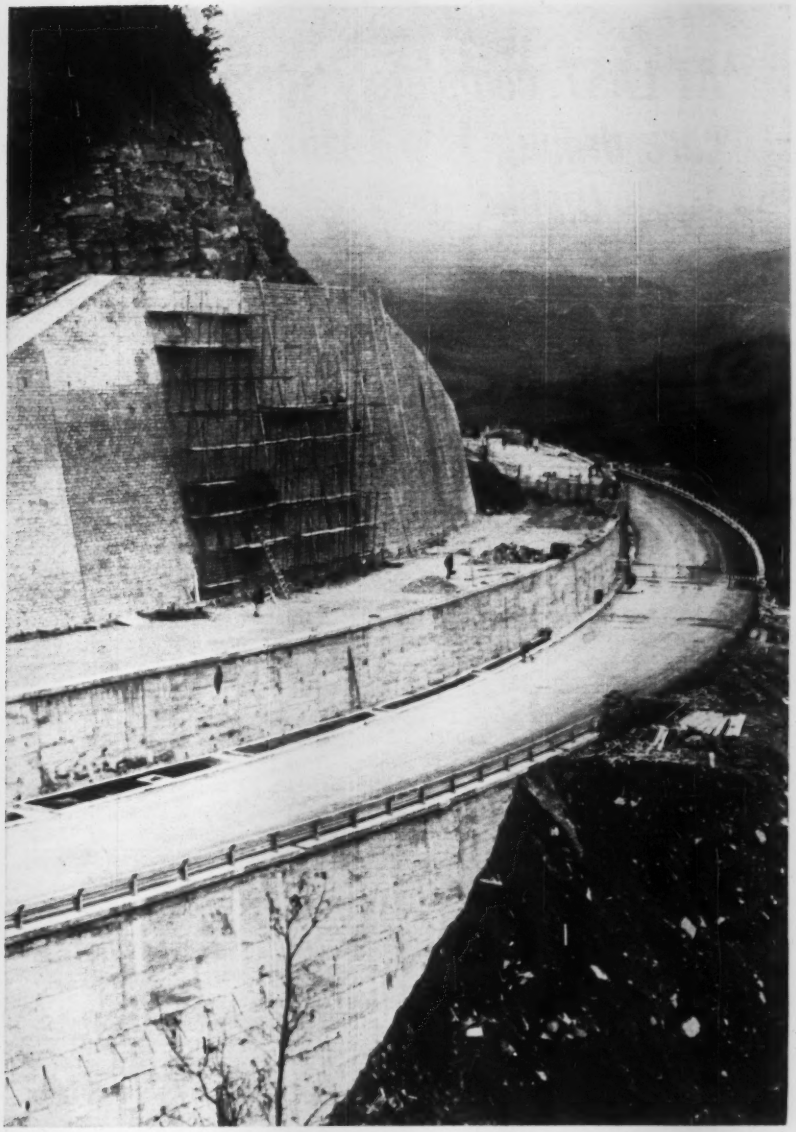
The Florence-Bologna tract is but a short section in the still-building 460-mile highway, which is already noted for its numerous and unusual structures. But on this count, and in this company, the Florence-Bologna road is outstanding. Eleven of its 51 miles are comprised of structures. The road boasts



cross Italy.



arches, columns 165 ft high.



Retaining wall, 20 ft thick at the base, will rise 74 ft above road.

Dominate Highway of the Sun

45 bridges and viaducts totaling seven miles in length, and 25 tunnels totaling four miles in length.

Among the bridges and viaducts, no two are alike; each was designed and built by a different firm. The result is a study in contrasts and extremes.

At Quercia Setta Viaduct, the four lane roadway is carried on a single structure that incorporates slender, tapered columns 42 to 63 ft high. At the mouth of the Poggio Palina Tunnel, the roadway is divided; it stands on massive piers 263 ft high. At Aglio, the roadway is again divided and it crosses a valley on a pair of 1,443-ft-long parallel bridges, each containing a concrete spandrel arch span 542 ft in length with vertical colums up to 165 ft high. At Poggettone, a series of seven complex polygonal arches of varying heights provide an ornate and church-like substructure for a 1,500-ft-long curved bridge.

The tunnels, which are up to 2,863 ft in length, offer little opportunity for imaginative design, but at least four of them are unusual in that they are completely artificial. These four, the longest of which is 1,285 ft, were built in open air. Each stands with its top and one side exposed. The purpose of the tunnels is to protect against landslides. They are built with roofs 1 ft 8 in. thick which are designed to carry loads in excess of 25 tons per lineal foot.

Equally imposing protective devices against landslides are the many tremendous stone-faced, concrete retaining walls built beside the roadway. Some of these walls are 20 ft thick at the base and more than 100 ft high.

The structures in the Florence-Bologna section of the Highway of the Sun are made necessary not only by the

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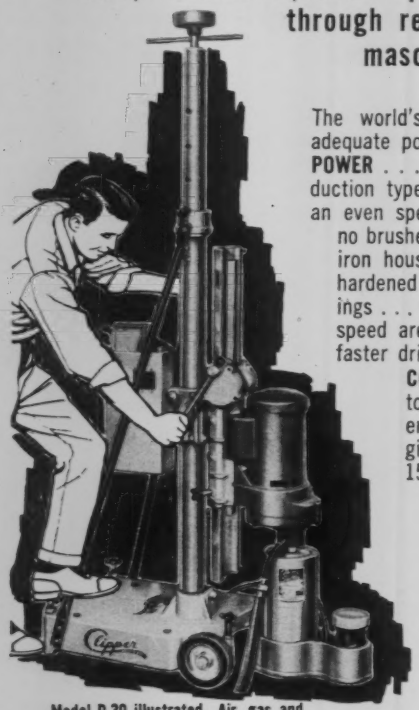

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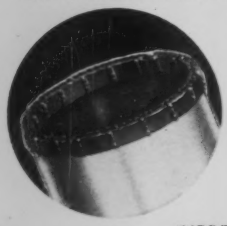

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SHORT TUNNEL at Coretta has dual bridges at both ends.

topography but also by the unusual and difficult geological make-up of the Apennines. These mountains, which run almost the full length of the Italian boot, and which cross the Italian peninsular between Florence and Bologna, are very old and eroded. Though they can hardly be called craggy or precipitous, they reach an altitude of 9,583 ft—not as a definite ridge, but as a series of land rises.

In the area traversed by the Florence-Bologna road, the Apeninnes range only to about 3,300 ft, but they are interlaced with deep, winding ravines, which, though dry much of the time, sometimes carry torrential streams. Drainage is a problem. Also the ground throughout the area is very unstable. Eroded rock, readily susceptible to the ravages of alternating freezing and thawing cycles, and clay that expands greatly when wet, create a constant landslide hazard.

These are the factors responsible for the extensive use of bridges and tunnels rather than easier-to-construct and less expensive cuts and fills.

And as can be imagined, both the time required for construction and the cost of construction were appreciable. The Florence-Bologna road was finished six months behind schedule at a cost averaging $1.28 million a mile. The relatively level Bologna-Milan section of the highway, just to the north, is 2½ times as long, but it was completed six months ahead of schedule at a cost of only $525,000 a mile.

The Highway of the Sun, which will extend from Naples to Milan, is now about half finished. It is scheduled to be completely open in 1964 after an expenditure of more than $300 million.

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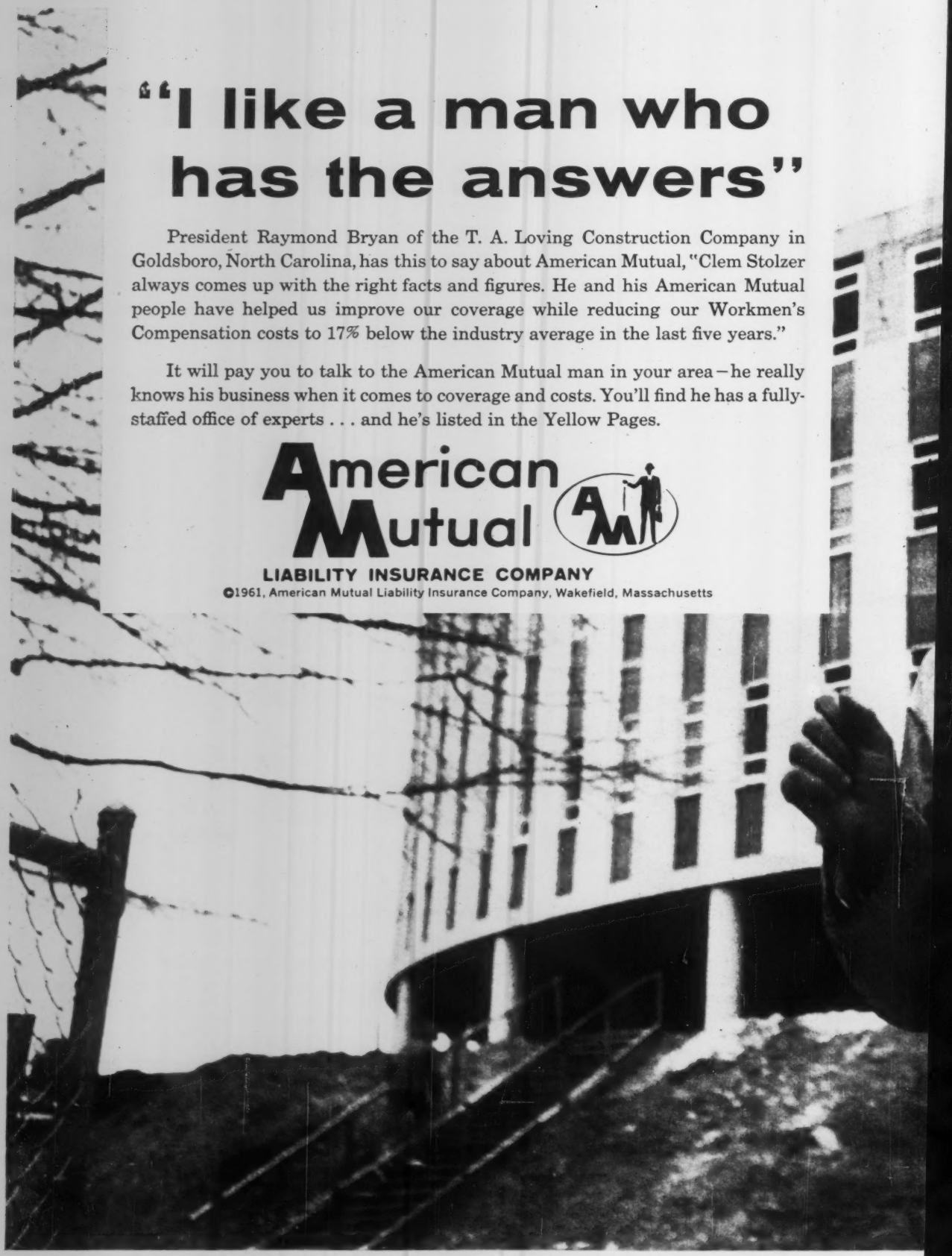
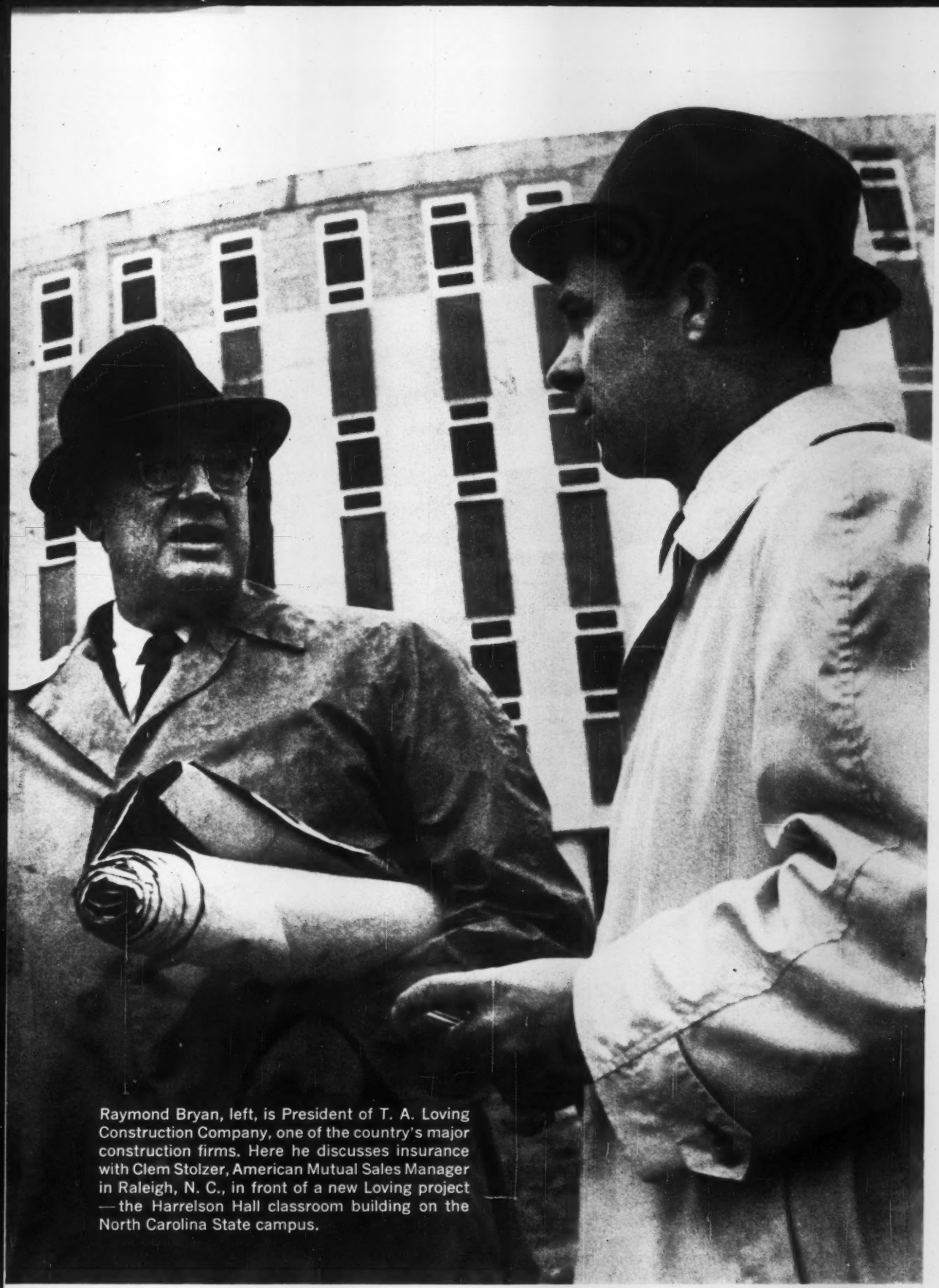
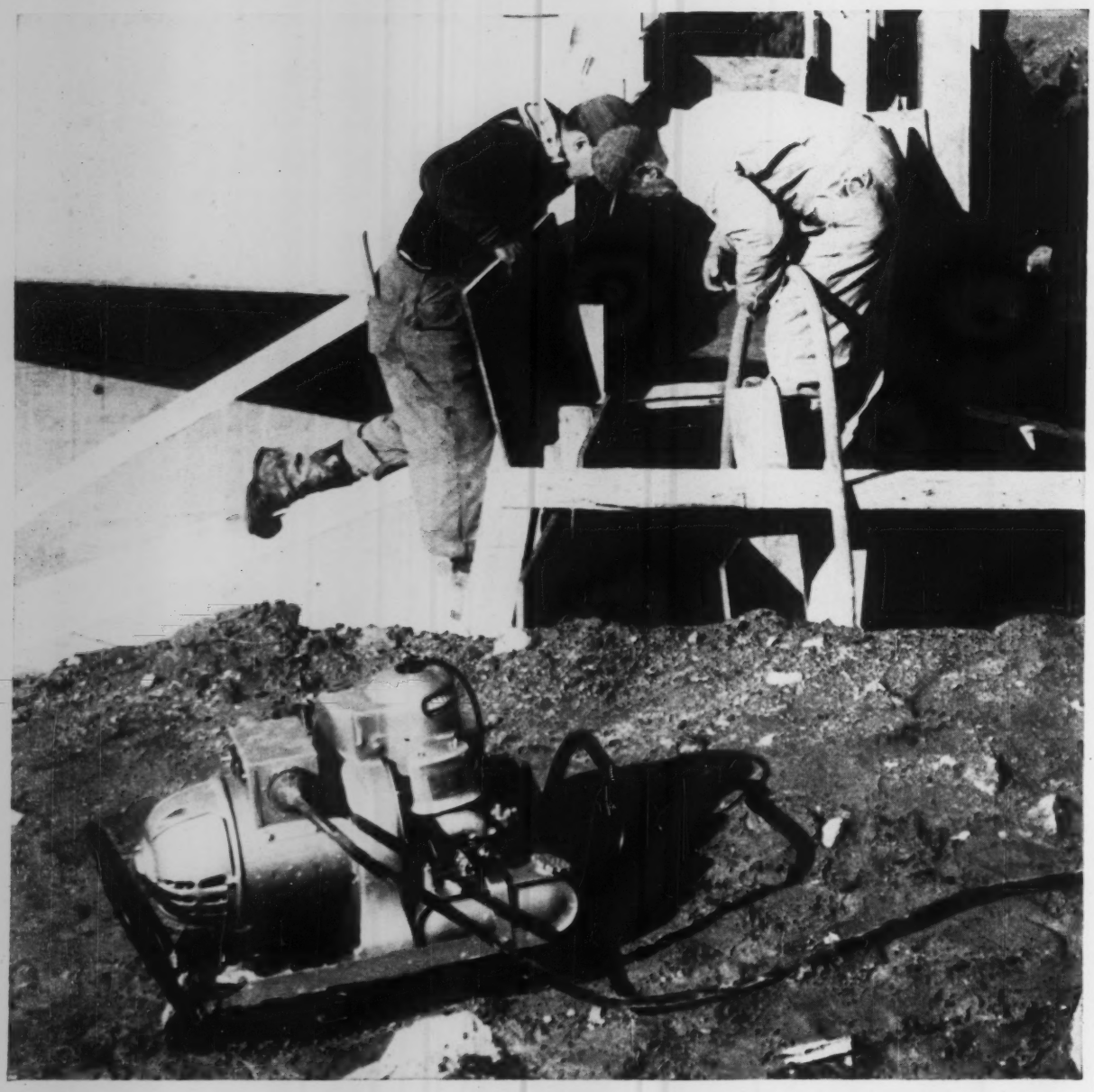




Raymond Bryan, left, is President of T. A. Loving Construction Company, one of the country's major construction firms. Here he discusses insurance with Clem Stolzer, American Mutual Sales Manager in Raleigh, N. C., in front of a new Loving project — the Harrelson Hall classroom building on the North Carolina State campus.



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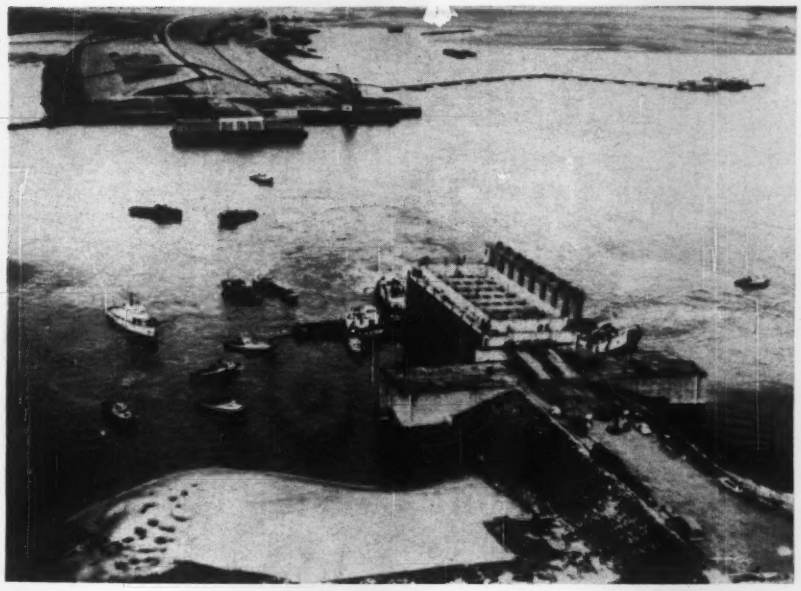

Dutch Begin Closure at Veere

Dutch builders have started sinking caissons across the Veeregat, one of four North Sea inlets they are diking as part of the Netherlands' great flood-control and land-reclamation effort in the Delta region of the Southwest.

Caisson placement follows two other major operations in the standard Delta Plan procedure (ENR Dec. 20, 1956, p. 42). In the first, the dikebuilders sink fascine mattresses to protect the bottom against scour. In the second, they build up the dike underwater with shale and basalt to 30 or 40 ft below mean sea level. They will complete the job by sinking and ballasting the caissons. The Veeregat requires seven. The caissons will form a mole high enough to block tidal invasions greater than the disastrous one of 1953 that impelled the Netherlands government to embark on the Delta Plan.

Sliding gates equip the caissons for the critical job of finally choking off flow through the inlet. Each caisson is floated into place and sunk with its gate closed and its other side timbered up. Then the timber is taken off and the gate opened. This lets water through and avoids constricting and speeding up the tidal currents through the rest of the inlet. After all are in place, the gates are closed and the caissons filled with ballast.

Soviet Concrete Not So Tough?

Soviet construction experts have disputed the merits of a "tough" plastic concrete recently developed by Soviet chemists (ENR Jan. 14, 1960, p. 17). The chemists claim miraculous properties for the new concrete. But engineers say the concrete does not stand up in service, according to an article in STROITELNAYA GAZETA, the Soviet construction newspaper.

The chemists who produced the plastic concrete, a nonomer composed of furfurole and acetone mixed with an unidentified acid, claimed for it high resistance to wear, corrosion and hydrocarbons. One chemist said it was waterproof; another said it attained compressive strengths of 14,000 to 17,000 psi.

Engineers reporting results of their investigations told a different story. Water can produce "full disintegration" of the concrete, according to one construction expert. Some researchers found it too brittle; others said it was serviceable only at temperatures above 68F.

To resolve these differences, the State Chemical Committee and the USSR Academy of Building and Architecture have been ordered to coordinate further tests. Pilot projects under experimental study apparently have convinced STROITELNAYA GAZETA's editors that the plastic concrete will prove its worth. It is presently under service test in a water main, in a reservoir for liquid fertilizers and as a road topping.

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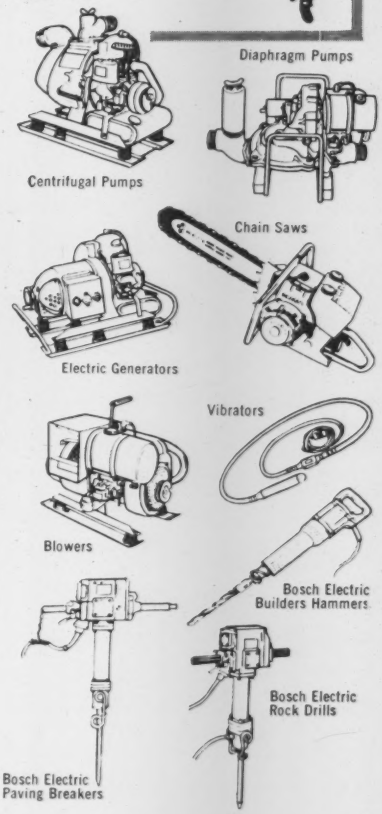

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A prefabricated trench or raceway, called Trenwa, is assembled from precast concrete sections and sunk into the ground for electrical cable or oil and chemical conduits.

A detachable lid makes light work of adding cables after the initial installation. The lid may also be used as a walkway. It is designed to support the weight of a truck.

Components of the trench are U-shaped brackets spaced at 5-ft intervals, sidewall sections 5 ft long, three lid sections for each 5-ft length. Corners, tees, cross-overs, dead ends are provided.

Joints butt and are laid dry, so that the trench may be disassembled easily. To cushion the cable, three inches of sand is placed in the bottom of the trench. Any cable can be branched off underneath the sidewall and trenched to accessory equipment.

Cost of the trenches vary from $9 to $12 per foot, depending on where they are fabricated. Marietta Concrete Products, Marietta, Ohio.

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Briefs . . .

Form Release Agent

Con-Treat prevents concrete from adhering to wood, fiberboard and steel forms, scaffolding and tools. Loosens hardened concrete from metal. Prevents rusting of metal. Edick Laboratories, Inc., 2358 S. Burrell St., Milwaukee, Wis.

Welding Gun

For welding light-gage ferrous metals. Air-cooled model AH30-A has 60-deg gooseneck. Rated at 300 amp, dc reverse polarity, 100% duty cycle for CO2 Buried Arc process; 200-amp, dc reverse polarity, 100% duty cycle for Aircomatic welding with spray transfer. Air Reduction Co., Inc., 150 E. 42nd St., New York 17, N.Y.

Burlap Curing Cover

Burlap with 4-mil coating of white polyethlene. Heat reflecting. Recommended for curing narrow, multisurface and other special-shaped concrete surfaces. American Sisakraft Co., 755 Boylston St., Boston 16, Mass.

Fire-Retardant Foam

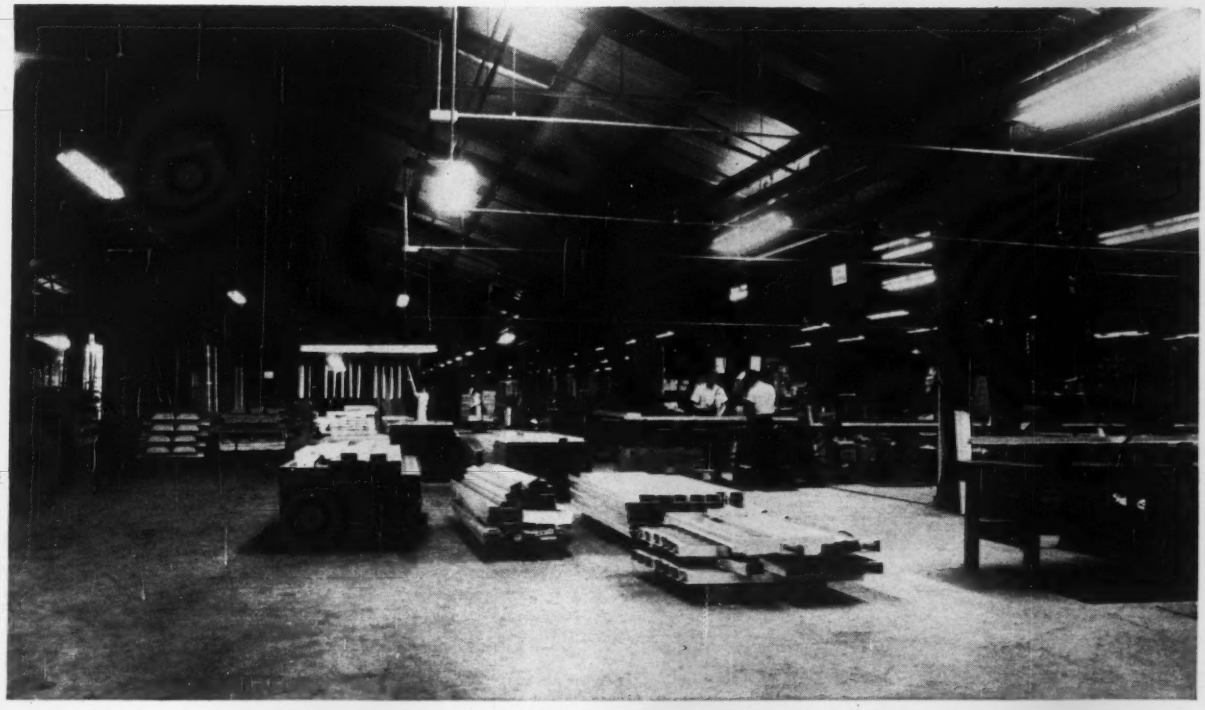
Rigid polyurethane, Hetrofoam (R), retains dimensional stability in wide temperature and humidity ranges. No distortion at 200 F. Because of low k factor (0.12 at 75 F) it can be used to insulate curtain walls. Hooker Chemical Corp., North Tonawanda, N.Y.

Fluorescent Fixture

For classrooms, libraries, offices, banks, stores. Triumph line for surface mounting on conventional hangers. Shielding louvers 35 by 45 deg or 35 by 25 deg. Two and four-lamp units in 4 or 8-ft lengths. Westinghouse Electric Corp., Edgewater Park, Cleveland, Ohio.

Sludge Pump

CP-71, 80-lb sludge pump. Capacity: 40 gpm at 200-ft head; 100 gpm at 50-ft head. Handles liquids with up to 15% solids. Operates on ejector principle using 85-cfm compressor. Chicago Pneumatic Tool Co., 6 East 44th St., New York 17, N. Y.



Light & Power Utilities' new 112,000-sq.-ft. quarters in quality Stran-Steel were built under Mississippi's "Balance Agriculture with Industry" Program. Architects: Lee, Brumfield and Riggens, Jackson, Miss.; Stran-Steel Contractor: Dixie Metal Buildings Co., Memphis.

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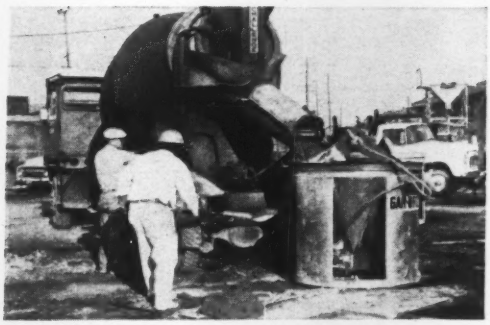

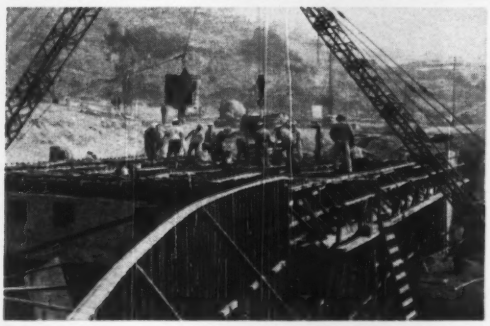

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Rolling Doors by KINNEAR (originators of the interlocking-slat door curtain) give you quality all the way through. From custom design that fits your openings to heavily galvanized, paint-ready finish, they assure lasting service. REGISTERED, too! Full details on every door are kept in Kinnear's fireproof vaults—even today, exact-fit parts are available for doors used half a century. Write today!

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Saving Ways in Doorways

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Columbus 16, Ohio
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. . . New Product Briefs

Ceiling Air Diffusers

Acousti-Flo air-distribution system combines air-supply tube with perforated metal-bar diffuser. Air delivery controlled by adjusting continuous dampers. System supports acoustical and other ceilings. Owens-Corning Fiberglas Corp., 717 Fifth Ave., New York, N. Y.

Coil Form Tie

Plastic, 1¼-in. dia., smaller than conventional metal cone ties. Will not adhere to concrete. Small taper. Colored red for fast identification. Superior Concrete Accessories, Inc., 9301 King St., Franklin Park, Ill.

Roof Fan Curb

For exhaust fans. Deep mounting flange. All-aluminum, welded. Glass-fiber insulation reduces noise and reverberation. Davidson Fan Co., 213 California St., Newton 58, Mass.

Welder-Generator

Dc welder rated at 200 amp, 50% duty cycle. Also doubles as 3½-kw, 120-v 60-cycle ac generator. Weighs less than 500 lb. Harnischfeger Corp., 4444 W. National Ave., Milwaukee 46, Wis.

Small Self-Priming Pump

Minute Master for sump pumping, pit draining and light construction duty. Pumps 19 gpm at pressures up to 40 psi. Has ½-hp, 115-volt, 7500-rpm motor. Weighs 14 lb, measures 9½x7½x5 in. Motor housing and casing are cast aluminum. Barnes Manufacturing Co., Mansfield, Ohio.

Trencher Attachment

For digging close to structures with Davis T-66 trencher. Sets digging chain assembly to extreme left of shaft. Auger is removed to permit a vertical dirt shield to deflect spoilage to right of trench. Digging range from 3-4 in. wide, 66 in. deep to 12 in. wide, 30 in. deep. Davis Manufacturing Inc., 1500 South McLean Blvd., Wichita, Kan.

Aluminum Trim

Multi-colored aluminum foil. In sheet or strip, with adhesive backing. Colors permanently anodized to the metal, patterns embossed. Stock or custom designs. Anodyne, Inc., 1270 N.W. 165th Street, North Miami Beach 69, Fla.

Steel Doors

New line of flush doors. For apartments, light industrial and commercial applications. Variety of muntin arrangements and louvers. Lights can be included with doors. Aetna Steel Products Corp., 730 5th Ave., New York 19, N.Y.

10th Street Overpass on U.S. Highway 30, Caldwell, Idaho
Designers: State of Idaho, Department of Highways
Contractors and Engineers: Babbitt Construction Company, Boise, Idaho

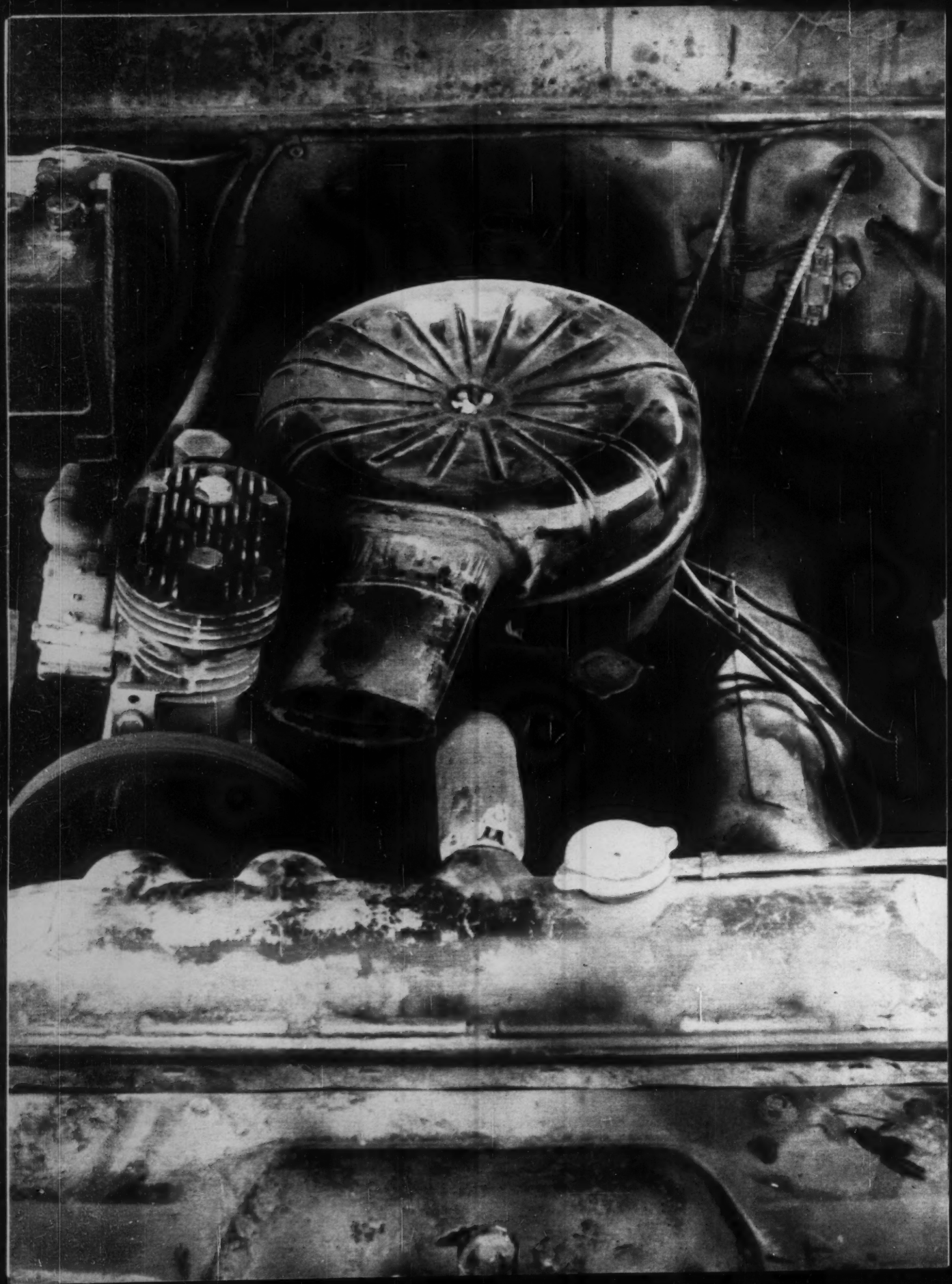
When compared with other construction materials, the cost of reinforced concrete construction is usually less. Projects start on time, finish on schedule . . . no expensive delays due to material shortages or field design changes. In addition, you enjoy the added advantage of complete design flexibility to meet the requirements of varying elevations and terrain.

Reinforced concrete structures are lower in after costs, too! They require less maintenance—never need painting, and are resistant to wind, shock, and earthquake.

On your next project, design for reinforced concrete and compare its many superior advantages.

Concrete Reinforcing Steel Institute | 38 South Dearborn Street Chicago 3, Illinois

17-6



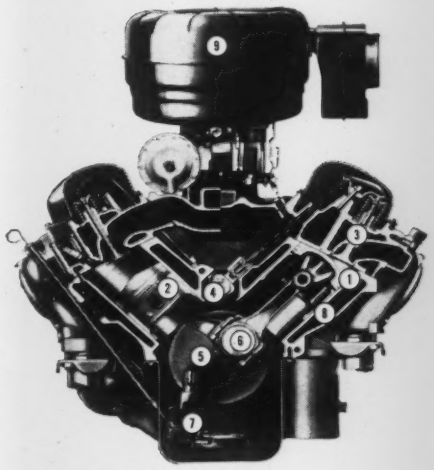
HARD-NOSE UNDER THE HOOD

For moving big loads and saving big money, Chevrolet's Workmaster V8's have know-how aplenty, but knowing when to quit is another story. They've got a stubborn streak a yard wide that keeps them slugging away on the job when lesser engines have given up and gone back to the garage. To put this kind of bullheadedness on a practical, paying basis, only the highest quality design features are good enough, and the Workmasters have 'em all. That's why you'll find them under the hoods of veteran Chevy heavyweights everywhere, under thick layers of grease and grime attesting to thousands and thousands of miles of trouble-free service.

Behind the unique Workmaster brand of performance, durability and economy is a spare-nothing engineering approach which results in a design offering 348 cubic inches of tight-packed, top-level engineering know-how. In either version, the Workmaster or the Workmaster Special, the roster of features offers evidence of truck engineering at its best.

It starts with ultra-uniform, fully machined wedge-type *combustion chambers* ❶ that deliver top smoothness and fuel-stretching efficiency. Aluminum pent-roof *pistons* ❷ are steel-belted at top ring groove, with chrome-faced top and oil rings for long life. Maximum-duty *valving* ❸ includes heat-resistant aluminized inlet and Stellite-faced high-alloy steel exhaust valves, with hardened exhaust valve seat inserts and positive-acting Rotocoils. Valve actuation is by durable roller chain camshaft drive ❹ with self-adjusting hydraulic *valve lifters*. Shock-resistant forged steel *crankshaft* ❺ is induction-hardened at main and crankpin journals for extra-long wear. Premium-quality Moraine 400 main and connecting rod *bearings* ❻ deliver up to seven times conventional bearing life. Full-pressure *lubrication* system is supplied by positive gear-type pump ❼ and includes full-flow oil filter as standard equipment. Pressurized by-pass *cooling system* features full circumference, full length water jackets ❽ to keep temperatures uniform and minimize distortion and wear. And ❾ a 2-pint oil bath *air cleaner* is standard equipment.

These are the features that put Chevrolet Workmaster V8's in the championship class for performance. Why not see your dealer and find out how easy it is to get them working for you! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.



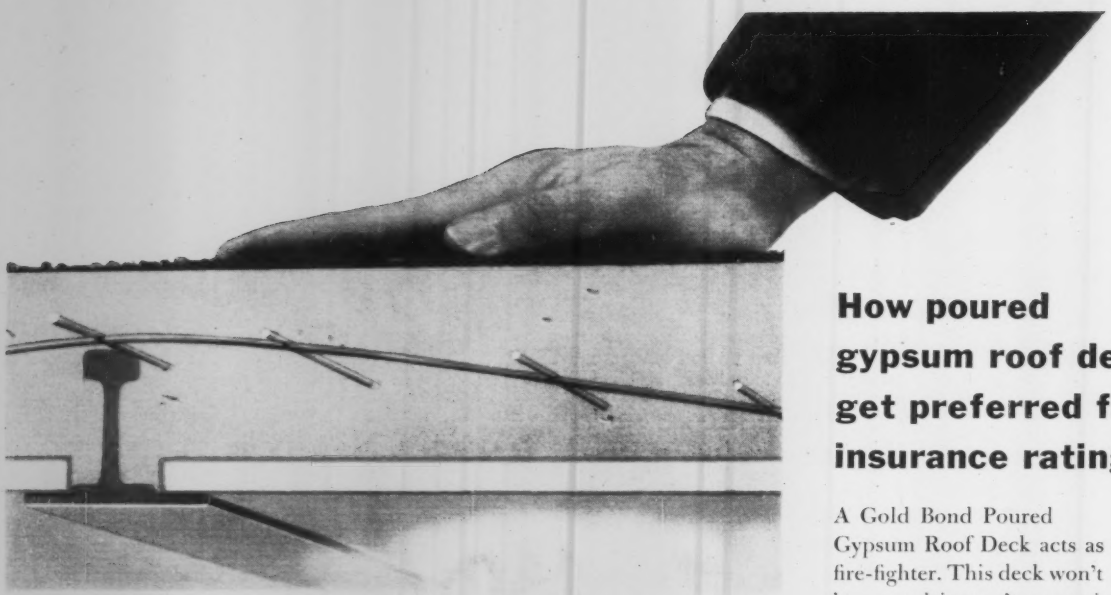
PERFORMANCE DATA	Workmaster Special V8	Workmaster V8
Gross HP @ governed rpm	183 @ 3700	219 @ 3700
Net HP @ governed rpm	160 @ 3700	193 @ 3700
Gross Torque, lb-ft @ rpm	315 @ 2200	335 @ 2800
Net Torque, lb-ft @ rpm	285 @ 1800	302 @ 2600
Displacement, cubic inches	348	348
Carburetor type	2-barrel	4-barrel

MODEL APPLICATIONS

Engine Model	Truck Series	Max. GVW	Max. GCW
Workmaster Special V8	C70, L70, T70	23,000 lb	42,000 lb
Workmaster V8	C80, L80, T80	25,000 lb	51,000 lb
	M70 Tandem	36,000 lb	51,000 lb

1961 CHEVROLET STURDI-BILT TRUCKS

CHEVROLET



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BUILDING PRODUCTS

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Consulting Engineer John Cramer, AWWA's new president, is a . . .

GP With a Small-Town Practice

As a personality, John W. Cramer is as comfortable as an old shoe. As an engineer, he is a dedicated—almost ascetic—professional.

These traits find their measure both in his accomplishments as a practicing consultant and in the recognition accorded him by his fellow professionals.

Client loyalty testifies most eloquently to the 46-year-old engineers practical ability. Repeat business accounts for more than 90% of his firms activity. Clients have come back as many as 35 times over the past two generations.

The profession has most recently reaffirmed its esteem for John Cramer by naming him the next president of the American Water Works Association. He will take office next week in Detroit.

Mr. Cramer follows two clear, unrelated paths in his engineering career: He engineers for small communities and he works to serve his profession.

He likes the grass roots, first names, easy familiarity and close-up relationship that automatically goes with working for a small city. Not for him the brittleness of narrow specialization or the impersonalness that comes from sheer size. "I like to know the people I work for," he says.

Mr. Cramer's service for the American Water Works Association is in keeping with a basic tenet he holds. "I think an engineer has an obligation to participate and to leave the field of knowledge a little bigger than he found it," he said. "If he doesn't, he's a parasite."

Mr. Cramer participates extensively. He now is president of the American Society of Civil Engineers' Nebraska Section; was president of the Nebraska Engineering Society in 1957-58; and has served AWWA as secretary of the Nebraska Section, national director, chairman of the water resources division and on various standing committees. He won AWWA's George Warren Fuller Award in 1954 for outstanding service to the profession. All told he belongs to 13 technical societies and related groups.

As senior partner of Fulton & Cramer, Lincoln, Neb., John Cramer heads a firm of consultants who specialize in being unspecialized. They get into all phases of municipal engineering, mainly for smaller communities. Consultants with that kind of clientele have to be broad, Mr. Cramer believes. ("I'd starve to death in 15 minutes if I tried to specialize.")

The company was oriented that way when Mr. Cramer joined it; he liked it then and he intends to keep it firmly on the same path.

Son of a contractor who built grain elevators throughout the Plains States, young Cramer broke into construction at the age of 14 as a water boy on his dad's job. Three years later he became foreman of a carpenter gang.

He graduated from Wentworth Military Academy at Lexington, Mo. in 1933 with honors that earned him an appointment to West Point. But instead of entering the academy, he went to work for the Platte Valley Public Power and Irrigation District, a Western Nebraska hydroelectric and irrigation project.

The job set the course of Mr. Cramer's life because it introduced him to Robert Fulton, his future partner. Robert Fulton, one of the deans of Nebraska consulting engineers, had taken a job as chief electrical engineer for Platte Valley while keeping his office open on a part-time basis in that depression-ridden period.

In 1937 young Cramer quit his job, married and entered the University of Nebraska, all in the same week. He worked part time for Mr. Fulton until receiving his civil engineering degree, with honors, in 1940.

"Bob Fulton was everything to me—

partner, teacher, almost a father. They never made another like him," Mr. Cramer says. "He kept me afloat in the university by employment, moral support and in every other way."

The new graduate went to work for Lockheed at Burbank, Cal. World War II "froze" him in his job. Then Mr. Fulton came back into his life and obtained his release to work on the $15-million Buckley Field project in Colorado. When the job was finished, the Army Engineers ordered Mr. Cramer to duty as a lieutenant. But Lockheed requisitioned him before he was actually assigned, and he returned to Burbank as a junior detail draftsman. When he left Lockheed in 1944, at the age of 29, he had become the company's youngest full design engineer, with responsibility for fuselage design on all models made at the plant. For the next year Mr. Cramer worked as chief engineer for the Chemold Company of Glendale, Cal., a company that handled resin-bonded fabric laminates and tooling. Then Mr. Fulton called him back to Lincoln as a partner.

A year later Mr. Fulton had a serious heart attack. Mr. Cramer has been in charge ever since.

In the intervening 15 years of their partnership, the two men had not so much as a scrap of paper for an agreement. Mr. Cramer says their only dispute came when Mr. Fulton, seriously ill, wanted to take less money from the firm and Mr. Cramer disagreed.

Mr. Fulton completed 50 years in the firm in 1959 and stepped out. Now 73, he is active as a member of the Lincoln Airport Authority and comes down on occasion to the office, where his desk is kept intact.

The firm now has two additional partners: James Kissell, a civil engineer, and Marvin Garger, an electrical engineer.

The firm serves approximately 170 clients, most of them in Nebraska, South Dakota, Colorado, Iowa, Missouri and Kansas. It awards $2 million to $3 million a year in contracts for its clients. Approximately one-third of its work load consists of valuations, investigations, reports and expert testimony. Typical current jobs in the mill include expansion of electrical generation facilities, ranging from $150,000 to $700,000; water expansions ranging up to $500,000; a half dozen cases where cities are taking over private gas companies or expanding existing facilities valued at about $250,000; paving and airport work ranging up to $200,000; and several sewage treatment plants ranging upward from $18,000.

Most of this is repeat work. "We like to think they come back to us because they like our work," Mr. Cramer says. The big reason for this, he believes, is that the firm tackles all jobs in a broad context, as well as a personalized one.

"I'D STARVE TO DEATH in 15 minutes if I tried to specialize."

Dealing mostly with small communities prompts this, Mr. Cramer says. They usually don't have specialized know-how nor, in many cases, is it practical for them to hire it. As a consequence, "it's not enough to say this is what you should have and this is what it will cost." Mr. Cramer says. Instead, the firm goes beyond this to study and give guidance on economic feasibility, financing (taxes, rates, bond issues and the like), the impact of the work on the community and its relationship to the long-range outlook. Thus the firm's service goes beyond mere project planning to become engineering of human welfare.

In carrying out its broad role, the firm has developed a number of guideposts for itself. For example, it writes all reports in laymen's language. You usually deal with laymen when you deal with officials of small communities, Mr. Cramer explains. Technical jargon might impress them but clarity brings the concord of understanding and the mutuality of purpose that Mr. Cramer regards as a necessary climate for a job. "Bob Fulton always said that 'when you propose to spend a man's money, you must justify that expenditure. If you can't, you're either not expressing yourself right or you're not spending the money properly.'" Mr. Cramer says.

The firm tries to design against the future. "Too many engineers do today's job for today but we try to design for two or three jobs down the road—jobs we might not even get," Mr. Cramer says. In keeping with this, the firm has never recommended spending money for anything temporary and it has never taken out anything it put in.

The firm emphasizes personal attention to jobs and broad service. Each contract, at the firm's insistence, contains a clause calling for personal supervision by a partner. The firm is set up to take on any municipal job, whether in the mechanical, electrical or civil engineering field. In Lyons, Neb., for example, Bob Fulton put in the first paving in town in 1919. Since then, in 35 jobs, the firm has built the electrical generating plant and distribution system, the water treatment plant and the original water and sewer systems. It has also expanded all of these.

The firm owes its versatility to its staff. In addition to the three partners, it has 10 employees. Three hold engineering licenses—one mechanical, one electrical and one civil. They stay on the payroll the year around.

"We don't build up a big group in the summer and fire them in the winter," Mr. Cramer says. 'We carry them but we expect them to do what comes down the pike. Recently an electrical engineer, who is about to get his master's degree, worked as a draftsman for the civil engineer. This month the EE is laying down an electrical system and their roles are reversed.

In his organization work, as in his firm, Cramer heeds his philosophy that an engineer should help human beings adapt their environment to produce a happier, more meaningful existence.

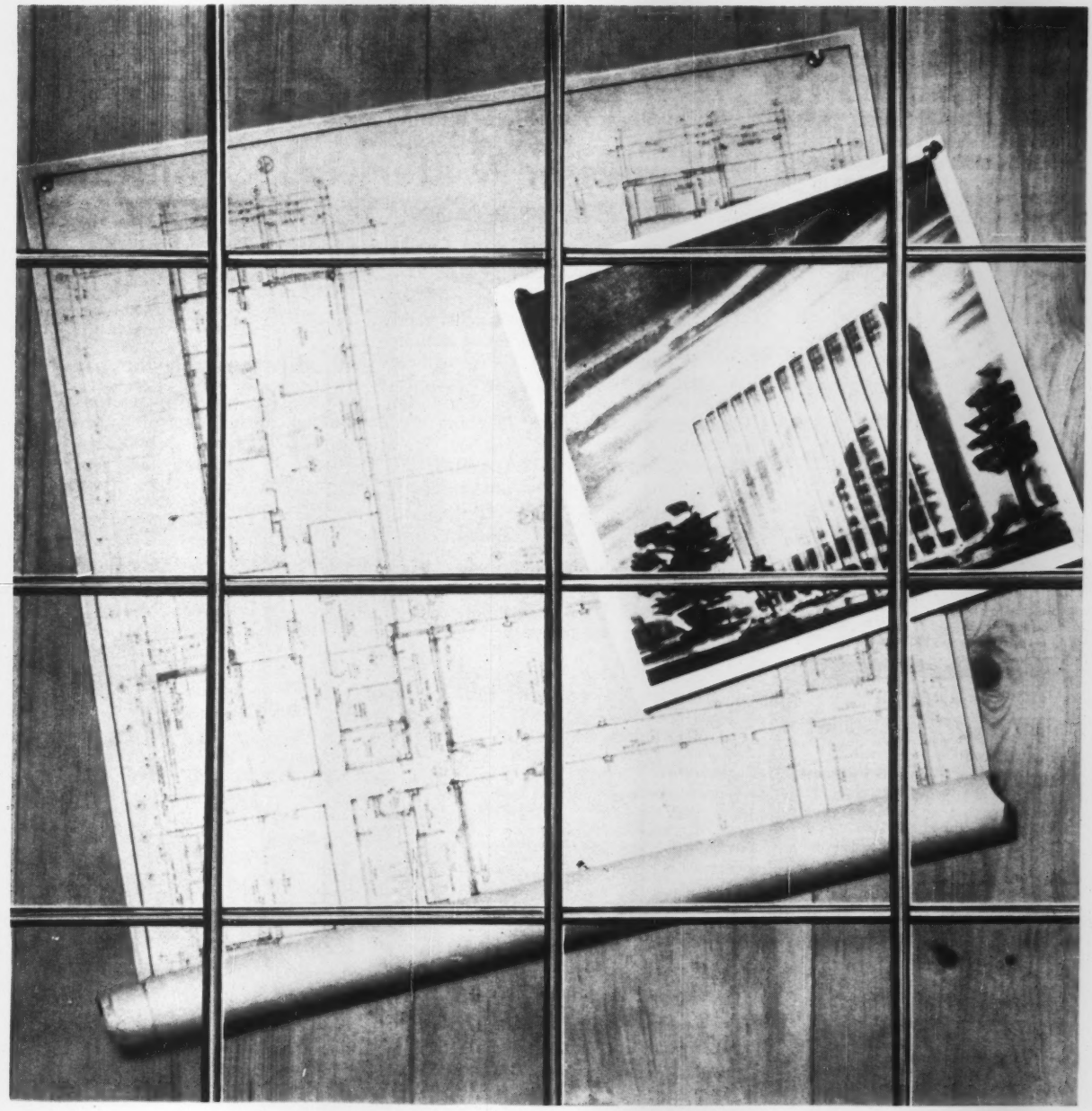
This belief finds expression when Mr. Cramer discusses his son, John Henry, who begins his college studies this fall and plans to become a civil engineer.

"I'm happy that he wants to take civil engineering," Cramer said. "But I'm going to insist he take arts for two years before he concentrates on civil engineering. I don't want to rear an engineer with hairy ears."

"I want him to be technically competent. It isn't enough just to know that certain equipment and labor will accomplish a certain function. I feel that one who offers his services in a learned profession owes it to the client to bring a broad understanding of our life and times and a wide background in art and science to those services."

Mr. Cramer's preoccupation with the human factor in engineering was evident also as he discussed his firm's future growth.

"I'm sitting in the spot Fulton was when I came in," he said. "I have two energetic young partners who aren't going to be satisfied unless the firm does grow. I'll be very happy to grow but it will have to be in the same area. That is, more jobs but not necessarily bigger ones. I must know the people I work for."



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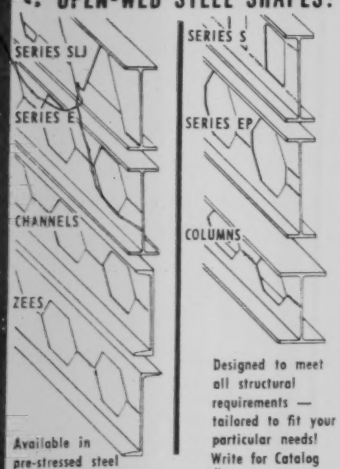

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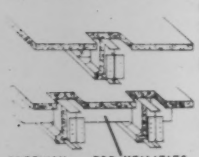

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Roof Spans 20'/110'
Floor Spans 20'/80'

COMPOSITE DOUBLE TEE
Roof Spans 20'/110'
Floor Spans 20'/80'

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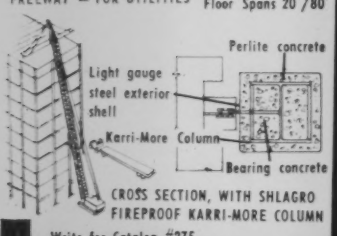

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Unusually competitive bidding marks . . .

Tennessee Waterworks Contract

Asbestos cement pipe outbid the cast iron pipe alternate on 85 miles of 2 in. to 8 in. distribution line for the South Blount County Utility District, Maryville, Tenn. The $757,616 contracts also include a water treatment plant, reservoirs, and booster pumping stations. A. E. Bost, Knoxville, is the engineer.

Let in two separate divisions, the water treatment plant and distribution lines went to Pierce Ditching Co., Kingsport, Tenn., for $714,647, 7.9% under second low, Patterson & Wilder Construction Co., Birmingham, Ala., and $78,000 under their own cast iron pipe alternate. Pierce was the only company among nine bidders willing to accept the award for one division without the other. Brownlee-Kesterson Construction Co., Knoxville, bid only on division II, two reservoirs and booster pumping stations. Their low of $42,969 edged out Pierce by only $398.

Minimum wage rates include: carpenter, $3.225; and laborer, $2.00.

The bidding included:

Division I

1C Pierce Ditching Co., Kingsport, Tenn.	$714,647
2 Patterson & Wilder Const. Co., Birmingham, Ala.	771,122*
9 G. E. Moore, Greenwood, S.C.	861,232
EE (Div. I & II), A. E. Bost, Knoxville, Tenn	805,000

Bids: 1-20-61 Items	Unit	Quantity	Unit Prices 1C	2
ACP*, cl 150, 8"	lf	18,610	$2.74	$2.83
6"	lf	83,010	2.02	2.08
cl 200, 6"	lf	1,800	2.18	2.26
cl 150, 4"	lf	137,270	1.40	1.43
cl 200, 4"	lf	3,000	1.59	1.60
cl 150, 3"	lf	47,460	1.39	1.25
cl 200, 3"	lf	6,090	1.50	1.48
Alternate No. 1, Cast Iron Pipe for Asbestos Cement Pipe				
CIP, cl 150, 8"	lf	18,610	3.11	3.01
6"	lf	83,010	2.25	2.26
cl 200, 6"	lf	1,800	2.25	2.26
cl 150, 4"	lf	137,270	1.73	1.65
cl 200, 4"	lf	3,090	1.73	1.65
cl 150, 3"	lf	47,460	1.52	1.40
cl 200, 3"	lf	6,090	1.52	1.40
Pipe, galv steel, 2"	lf	134,630	0.82	0.79
Tubing, copper, ¾"	lf	21,000	0.82	0.84
Fig. CI	lb	22,000	0.30	0.33
Vlvs, gate, 8" & boxes 150 psi	ea	4	110.00	110.00
6" & boxes 150 psi	ea	22	70.00	70.00
6" & boxes 200 psi	ea	1	70.00	70.00
4" & boxes 150 psi	ea	70	50.00	50.00
4" & boxes 200 psi	ea	9	50.00	50.00
3" & boxes 150 psi	ea	13	50.00	45.00
3" & boxes 200 psi	ea	4	50.00	45.00
2" & boxes 150 psi	ea	68	29.80	24.00
Hydrants, fire	ea	5	139.00	140.00
Connections, service	ea	1,230	52.00	53.20
Pipe, hwy crossing, 6"	lf	30	10.00	10.00
4"	lf	100	8.00	7.00
2"	lf	40	5.00	6.00
RR crossing, 8"	lf	60	12.00	12.00
6"	lf	30	11.00	10.00
3"	lf	30	10.00	6.00
2"	lf	100	8.00	6.00
Exc, rock	cy	310	12.00	10.00
Pvt, bit, break & replace	sy	300	4.50	5.00
Stone, crushed	t	800	3.00	4.00
Vlvs, air vent, pressure relief, spring operated to relieve 100gpm, set pressure 110 psi	ea	4	50.00	60.00
	ea	1	420.00	150.00

* did not meet specifications
a ACP bids accepted

Division II

1C Brownlee-Kesterson Const. Co., Knoxville, Tenn.	$42,949
2 Pierce Ditching Co., Kingsport, Tenn.	43,347

Bids: 1-20-61 Items	Unit	Quantity	Unit Prices 1C	2
Reservoirs	ea	2	$14,150	$12,600
Booster #1	ea	1	8,075	10,681
#2	ea	1	5,844	6,966
Exc, rock	cy	50	15.00	10.00

ENR Construction Cost Index (1913 = 100) 20-cities average — 834.32

Washington Reservoir

The largest circular reinforced prestressed concrete reservoir to be built in the U. S., will be built by Rasmussen & B-E-C-K, Inc., Sunnyside, Wash., for $592,237. The low was a scant $2,191 under the second low placed by Del Guzzi Inc., Port Angeles, Wash, but it was 20% under the high of seven bidders. Gray & Osborne, Seattle, Wash., are the engineers on this job for the Alderwood Water District, Alderwood Manor, Wash.

The 375-ft-dia poured-in-place concrete reservoir will hold 28 mg. The poured-in-place structure was chosen from four alternate designs; the other types were precast concrete and steel. Bids for the precast concrete ranged from $628,879 to $726,063, and bids for the steel tank alternate ranged from $749,779 to $783,879.

Wage rates include: common, $3.00/hr; carpenter, $3.53; bricklayers, $4.15.

The bidding included:

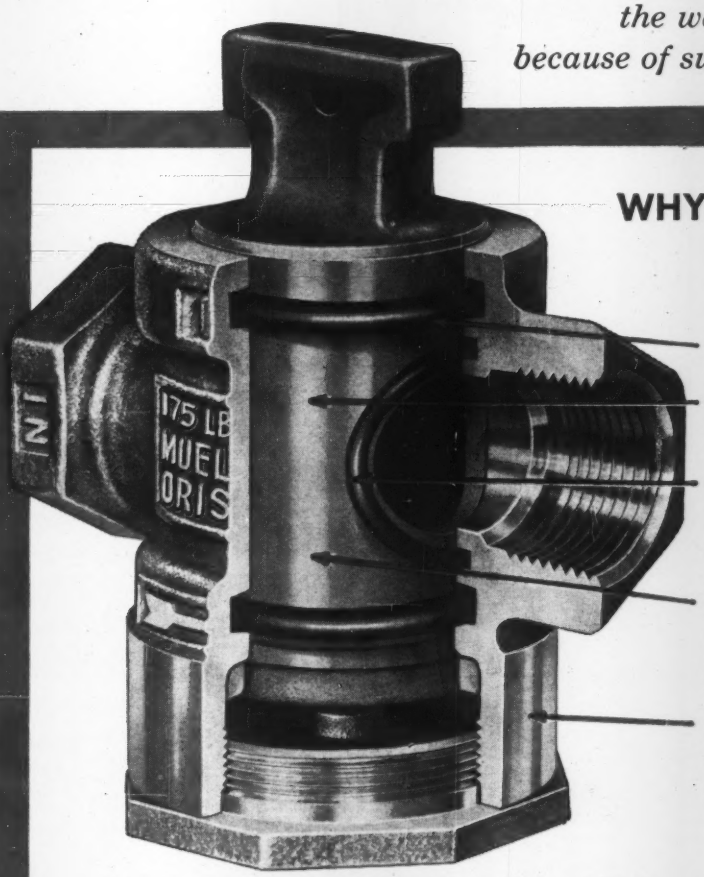
1C Rasmussen & B-E-C-K, Inc., Sunnyside, Wash.	$592,337
2 Del Guzzi, Inc., Port Angeles, Wash	594,528
7 Earley Const. Co., Tacoma, Wash	710,247
EE Gray & Osborne, Seattle, Wash	635,000

Bids: 1-30-60 Items	Unit	Quantity	Unit Prices 1C	2
Exc & backfill	cy	11,000	$1.10	$1.10
& wastehaul	cy	41,000	0.85	0.70
Pipe, conc perf, drain, 8"	lf	3,500	2.20	2.55
sealed jts, 8"	lf	650	2.30	2.20
36"	lf	3	40.00	25.00
culv, 15"	lf	80	4.50	4.10
sew, 4"	lf	80	1.00	1.20
Conc tile, drainage, 4"	lf	130	0.60	0.65
Gravel, bedding	cy	1,100	3.00	3.75
Sand, bedding & encasement	cy	800	4.50	5.10
Compaction, fdn	hr	200	8.00	12.00
Conc, lean, cl 1,000 psi	cy	500	20.00	20.00
cl 3,000 psi	cy	2,340	35.00	36.00
cl 3,750 psi	cy	1,380	50.50	55.00
Steel, reinf, MS	t	233	260.00	266.00
Cables & pads, earthquake resistance	ls	job	22,300	20,250
Diaphragms, waterstop, 6"	lf	9,560	0.80	0.70
9"	lf	1,170	2.20	2.05
Jts, expansion, reservoir floor	lf	5,600	1.10	1.11
Conc, prestressing walls	ls	job	142,500	133,500
Screening assembly, optional to district	ls	job	5,750	8,800
Met & steel, str, misc	ls	job	8,900	10,400
Flow meter & recorder	ls	job	9,600	9,800
Piping, met	ls	job	41,250	42,300
Vlvs & flood gate	ls	job	5,800	5,900
Chlorination assembly	ls	job	11,500	11,800
Recorder, water level	ls	job	1,100	1,150
Conc blocks	ls	job	1,520	1,534
Carpentry, plastering, roofing, etc	ls	job	4,500	3,450
Plumbing & ventilation	ls	job	4,000	4,100
Electrical	ls	job	5,550	5,200
Painting	ls	job	1,100	3,150
Surfacing road, gravel	cy	70	5.00	8.00
Washington state 4% sales tax			$22,782	22,866

ENR Construction Cost Index (1913 = 100) 20-cities average — 834.32

ORISEAL® *by* MUELLER®

Introduced one year ago . . .
today recognized as the lifetime curb valve by the water works industry because of superior features!



WHY? *Lifetime easy turning action . . . lifetime positive sealing action!*

Top and Bottom O-rings—provide positive pressure sealing without mechanical means.

Straight, Balanced Pressure Plug—O-rings of equal size at top and bottom eliminate end thrust, contribute to turning ease.

Port O-ring—in a specially designed groove in the body provides maximum support for O-ring, preventing major cause of damage to O-ring. Seating action gives positive pressure sealing and long life.

"Teflon"* coated Plug—prevents "sticking" or "freezing", even after long periods of idleness. "Teflon", an inert material having a very slick surface, eliminates the necessity of periodic lubrication or maintenance.

Strong Cast Brass Body—of extra strength and with heavy-duty check lugs, enables the Oriseal body to withstand all normal operating and installation stresses.

TEST . . . an Oriseal Curb Valve in *your* system. Check the positive sealing and easy turning qualities that have made this the *lifetime* curb valve. See your Mueller representative or write for illustrated folder and test report on the Oriseal Curb Valve.

*Registered trademark of the DuPont Company.

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited, Sarnia, Ontario

625B

Labor and Materials Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES.

- Cement Aggregates, Ready Mixed Concrete, Asphalt: Last, May 4; Next, June 8
- Wood Products, Glass, Explosives, Chemicals: Last, May 18; Next, June 22.
- Iron & Steel Products, Pipe: Last, May 11; Next, June 15.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, May 25; Next, June 29.

HOURLY WAGE RATES—Base rate + fringe benefits

Classification	Atlanta $ + ¢	Baltimore $ + ¢	Birmingham $ + ¢	Boston $ + ¢	Chicago $ + ¢	Cincinnati $ + ¢	Cleveland $ + ¢	Dallas $ + ¢	Denver $ + ¢	Detroit $ + ¢	Kansas City $ + ¢	Los Angeles $ + ¢	Minneapolis $ + ¢	New Orleans $ + ¢	New York $ + ¢	Philadelphia $ + ¢	Pittsburgh $ + ¢	St. Louis $ + ¢	San Francisco $ + ¢	Seattle $ + ¢	Montreal $ + ¢	Toronto $ + ¢
COMMON LABOR																						
Building	2.00	2.30+7½	1.95	2.75+10	3.225+7½	2.80	3.52	1.85	2.47	2.90+34	2.705	3.26+10	3.00	1.925	3.55+28	2.70+15	2.725+20	3.025+10	3.325+10	3.00+25	1.75+4	2.00+8
Heavy Const.	2.00	2.30+7½	2.05	2.75+10	3.225+7½	2.90	3.435	1.85	2.42	2.90+34	2.755	3.26+10	2.98	2.00	3.55+28	2.65+10	2.55+20	3.025+10	3.325+10	3.00+25	1.75+4	2.00+8
SKILLED BUILDING TRADES																						
Bricklayers	4.00	4.10+15	4.05	4.20+30	4.40+10	4.025+12	4.085+25	4.15	4.00	3.98+33	4.20	4.35+25	4.175	3.775+7½	5.00+61	4.40+17	4.50+20	4.25+33	4.40+42½	4.15+30	2.55+6	3.20+13
Carpenters	3.35	3.60+7½	3.23	3.85+10	4.08+20	3.90	4.26	3.50	3.65	3.63+46	3.75	3.825+20	3.83	3.35	4.65+37	4.00+20	4.125+20	3.975+10	3.725+36	3.53+20	2.35+5	2.95+12
Struct. Iron Workers	3.70+7½	4.10+20	3.72+10	4.14+20	4.55+16	3.95+10	4.16+10	3.675+8	3.81+10	4.00+27½	3.90	4.275+25½	3.77+15	3.65+10	4.95+69	4.45+23	4.30+20	3.975+10	4.275+25	3.92+10	2.55+6	3.05+12
Plasterers	3.50+3	3.85+10	3.37	3.80+45	4.00+27	3.875+1	4.16	3.875+10	3.975+15	3.75+41	4.00	4.25+55	3.77+33	3.34+5	4.70+67	4.15+20A	4.225+20	4.00+7½	3.79+63	3.87+32	2.65+6	3.20+21
Electrical Workers	4.00+5	3.85+10	3.65	4.10+25	4.30	4.09+51	4.29	3.625+7½	4.20	4.00+52	3.90+43	4.65+46	3.85+44	4.00+7½	4.40+26	4.525+18	4.60+34½	4.11+51	4.22+29	3.95+27	2.55+5	3.52+14
Steamfitters	3.85+22½	3.96+18	3.80+12	3.95+27	4.25+25	4.10+9½	4.06+20	3.70+8½	4.05+12	3.90+51	3.85C+245	4.33+64	3.62+37	3.90+7½	4.65+60	4.35+32	4.20+20	4.275+25½	4.36+72	4.14+29	2.62+6	3.47+13
EQUIPMENT OPERATORS																						
Hoisting Engineers	3.675	4.10+20	3.30	4.05+20	4.05+05	3.80A	4.26	3.65	3.25	3.63+39½	3.72	3.81+20	3.75	3.475+7½	4.90+39	4.345/4.055 +20A	3.73+20	4.175	3.80+35	3.84+20	2.35+5C	3.20+13
Tractor Operators (B)																						
34-49 hp	3.15	3.70+20	3.30	3.575+35	3.80+5	3.575+10	4.01	2.625	2.50	3.63+39½	3.025	4.11+20	3.36	3.475+7½	4.275+34	3.63+10	3.72+20	4.175	4.01+35	3.81+20	1.95+4C	2.45+10
70-100 hp	3.15	3.70+20	3.30	3.575+35	3.95+5	3.575+10	4.01	2.625	3.10	3.63+39½	3.475	4.11+20	3.60	3.475+7½	4.275+34	3.775+10	3.72+20	4.175	4.01+35	3.81+20	2.18+5	2.55+10
Over 100 hp	3.15	3.70+20	3.30	3.575+35	3.85+5	3.575+10	4.01	2.625	3.10	3.63+39½	3.475	4.11+20	.....	3.475+7½	4.275+34	3.775+10	3.72+20	4.175	4.01+35	3.81+20	2.18+5	2.55+10
Tractor Scraper, 15-16 cy	3.15	3.70+20	3.30	3.575+35	3.85+25	3.575+10	4.01	2.625	3.10	3.63+39½	3.475	4.21+20	3.60	3.475+7½	4.40+35	3.90+10	3.72+20C	4.175	4.14+35	3.81+20	2.18+5C	2.55+10
Power cranes & shovels																						
½ cy	3.675	4.10+20	3.30	4.00+25	4.40+5	3.575+10	4.26	3.375	3.25	3.63+39½	3.72	4.21+20	3.82	3.475+7½	5.15+41	4.345+20	3.92+20	4.175	4.31+35	4.18+20	2.45+5	3.05+12
¾ cy	3.675	4.10+20	3.30	4.00+35	4.40+5	3.80+10	4.26	3.375	3.25	3.63+39½	3.72	4.21+20	4.08	3.475+7½	5.15+20	4.345+20	3.92+20	4.175	4.31+35	4.18+20	2.45+5C	3.20+12
Motor grader operator	3.15	3.25+20	3.30	4.00+35	3.85+5	3.80+10	4.01	2.625	3.10	3.63+39½	3.72	4.21+20	3.36	3.475+7½	4.40	3.875+20	3.92+20	4.175	4.21+35	3.90+20	2.18+5C	2.85+11
Air Comp. operator	2.825	3.30+20	2.89	3.55+35	3.70+5	3.80+10	3.885	2.00	3.10	3.63+39½	3.475	3.33+20	3.25	2.75+7½	4.40+35	3.51+20	3.43+20	3.625	3.48+35	3.54+20	2.05+5	2.55+10
Air tool operator	2.22	2.325+7½C	2.15	2.80+10	4.00+5	3.80+10	3.885	2.00	2.75	3.03+34	2.80	3.47+10	3.30	2.075	4.00+20	2.55+10	2.60+20	3.625	3.655+10	3.35+10	2.05+5	2.55+10
TRUCK DRIVERS																						
1½ Ton	2.10	2.27+075	2.00	2.85+23	2.68+21	2.65+62½	3.07+15	2.625	2.70	3.03+18	2.68	3.525+10	2.98	3.475+7½	3.275+28	2.64+18	2.59+20C	3.03+15	3.79+11	3.40+20	1.75+4	2.05+15
Under 4 cy	2.20	2.27+075	2.20	2.85+23	2.68+21	2.70+6½	3.07+15	2.625	2.85	3.03+18	2.68	3.525+10	2.98	3.475+7½	3.275+28	2.64+18	2.635+20	3.23+15	3.27+11	3.40+20	1.75+4	2.05+15
Over 4 cy	2.50	2.27+075	2.45	2.85+23	2.68+21	2.75+6½	3.07+15	2.625	3.05	3.03+18	2.755	3.765+10	3.13	3.475+7½	3.275+28	2.64+18	2.735+20	3.33+15	3.08+11	3.60+20	1.75+4	2.05+15

ENR Skilled Labor Average (Bricklayers, Carpenters, Iron Workers): $4.178, ENR Common Labor Average $2.826 Description of fringe benefits last appeared Sept. 22, 1960. *A 2 drum. *B Including Bulldozers *C correction

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles Q	Minneapolis F	New Orleans	New York	Philadelphia H	Pittsburgh	St. Louis HO	San Francisco	Seattle	Montreal	Toronto
GYPSUM BOARD & LATH																						
Plaster board, ½"	$62.50F	$54.00	$63.00H	$60.00mH	$67.50	$53.50wH	$63.00CF	$57.50	$62.50H	$66.00K	$72.00H	$67.00F	$75.00	$57.00H	$70.00H	$54.00	$74.00K	$56.50/67.50	$60.00	$71.75K	$58.00M	$49.50
" " ⅜"	52.50F	47.50	52.00H	50.00mH	54.50	43.85wH	56.50CF	47.50	51.50H	56.00K	62.00H	60.50F	65.00	52.00H	55.00H	45.00	65.00K	51-56HO	49.00F	59.50K	50.00M	37.25
Board lath, ⅜"	40.00F	35.75	47.77H	35.00mH	45.00	33.05wH	39.60CF	43.50	43.00H	42.45K	45.00H	0.33xF	0.41xL	45.00H	42.50H	36.50	40.00K	40.00HO	0.36xF	51.50K	39/42.00M	41.00L
SHEATHING																						
Gypsum T & G, ½"	62.50F	55.70	75.00H	55.00mH	62.50	51.16wH	58.75CF	57.50	67.00H	66.00K		64.50F	75.00	60.00H	60.00H	52.50	63.00K	67.00HO	61.00F	70.00K	54.00M	70.00
Fiber board, ½", sq. e	72.00F	65.00	67.50H	65.00H	87.00	77.00wH	80.00CF	68.75	62.50H	48.50DK	75.00H	75.00F	95.00	67.00H	78.00	65.00	60.00K	65-75HO	70.00F	68.50K	63.00M	71.50T
" " 25/32", T & G	.....	108.50	140.50H	120.00H	123.00	125.00wH	129.00CF	118.00	103.50H	85.65DK	122.00H	125.00F	130.00	140.00H	124.00	115.00	100.00K	115/120	111.00F	68.50K	.....	.....
INSULATION																						
Fiber board, sq. e., ½"	75.00F	69.00	83.50H	79.00hnH	87.00	72.50wH	80.00CF	68.75	77.00	62.50DK	80.00H	80.00F	78.00	80.00H	78.00	65.00	60.00K	75/80	69.00F	71.00K	73.00M	79.50T
Min. wool, loose	1.59z	1.40F	1.40	1.40bH	1.85	1.45wH	1.35	2.00	1.55b	1.45b	1.40H	76.00BeF	2.25x	3.00L	1.55b	1.20	1.25xK	125/135	1.75F	1.25tK	1.35M	1.85
" " 3" batts	67.80F	67.50	70.00	75.00H	80.00	60.00wH	70H	70.00	65.00ub	52.00	75.00H	83.00F	80.00	70.00*	68.50k	50.00	55.00K	60/70	66.50F	58.00K	60.00M	57.50
Glass fiber, loose	1.45	1.60F	2.00	.....	.....	1.45wH	.....	1.75	2.00b	1.85b	1.80H	1.35x	2.10	.....	.....	1.40	1.25xk	2.00P	1.75F	1.90*pK	1.35M	.....
" " 3" batts	50.00F	47.00F	65.00	75.00H	63/65	60.00wH	61.00	70.67	65.00a	80.00	75.00H	64.00	80.00	.....	68.50	50.00	55.00K	68.50	66.50F	51.00*1Kh	60.00M	57.50
Aluminum foil, 1 side	3.75qi	4.00F	3.77gG	5.30xHS	5.25	3.02jwJ	14.00hoJ	5.00gAG	5.25	.....	3.60d	4.40g	4.25	6.50	4.38iH	2.90	4.25igK	4.39ig	5.10	7.47K	9.00qM	15.50o
" " 2 layers	.....	33.50F	.....	53.50qH	.....	66.00wJ	55.00J	45.00	48.65	.....	60.00	7.45V	.....	.....	40.00cH	83.50	38.50K	.....	60.00F	39.53EK	56.00M	46.00

*" F.o.b. warehouse. *a Semi thick. *b 30# bag. *c 3 layers of foil: $54.50. *d 40# kraft paper, 5 Msf, 100/500 rolls. *e 20# sq ft bag, 4" thick. *f Full trailer loads. *g 80# kraft paper backing 400 rolls or over. *h LCL. *i 40#. *j 80#. *k 2-in. *l 2". *n 8 to 10 ton quantities. *n Distributor's siding. *o Per Msf roll. *p 32# bag. *q 500 sf. *s 35# bag. *t 26# bag. *u Flame proof $75. *v 5000 sf quantity. *w F.o.b. city. *x Sq. yd. *y 30# bag. *z Spun rock wool. *A 650 sf. *B ton *C F.o.b. plant, freight allowed. *D CL. *E 10 Msf. *F Less 2% disc, 10th. *G ½ of 1%, 10 days. *H 2% disc, 10 days. *J 1% disc, 10 days. *K Less 2% for cash. *L 5% disc, 10th mo. *M fed. tax incl. *N 1% disc, 10 days. *O add 2% sales tax. *P 50 lb. bags. *Q add 4% sales tax *R revised. *S 45 lb. *T less 2%, 30 days. *U lots of 2606 sq. ft. *V 250 sf roll.

MEXICO CITY WAGES AND PRICES, MAY, 1961

WAGES, av per week, 8 hr day (pesos) 6 days work-extra day's pay

Common labor,	building (peons)	101.50
	heavy const (peons)	136.50
Skilled labor;	carpenters 1 cl	210.00
	bricklayers 1 cl	245.00
	struct, ironworkers	315.00

MATERIAL PRICES, F.o.b. City (pesos)

Struct. steel shapes, fob Monterrey		
I-beams, 3 x 3 x 4"	per metric ton	1942.10
Reinf. steel, corrugated rods, per ton		
⅜"-1½" x 11 meters consolidada		1875-1950
¾"-1" x 11 meters		1750.00
Gravel, truckload, per cu meter		
Blue gravel		30.00
Cement, std. port. (Tolteca)	per metric ton	260.00
Lumber, 2" x 4" 1st class pine 20 ft	per M sq. ft.	2800.00
2" x 4" 2nd class pine	per M sq. ft.	2300.00

Bids Asked—Low Bidders—Contracts Awarded—

NEW ENGLAND

BUILDINGS—BA

▲ **Vt., Burlington**—BA 6/15—University of Vermont, State Agricultural College, No. 1, GYMNASIUM; No. 2, SKATING RINK and SWIMMING POOL. $3,000,000. Reehman, French & Freeman, 158 Bank St., archt. Severud-Elstad-Kruger Assoc., 415 Lexington Ave., New York, N. Y., struc. engrs. CD 9/26/60.

HEAVY CONSTRUCTION—LB & CA

▲ **VERMONT**—State Hy. Dpt., State House, Montpelier, ROAD,
Fabi & Sons Ltd., 800 King St., East Sherbrooke, Que., CA **$1,545,718**, est. $1,550,000, highway and two bridges, Interstate Rte. 91, Proj. 1-91-3(3), Derby. BA 5/12/61. CD 5/17/61, under LB.

▲† **Worthington Corp.**, 150 Causeway St., Boston, Mass., LB **$1,564,564**, PUMPING STATION EQUIPMENT, etc., Fox Point Hurricane Barrier, Providence, ENG-19-016-61-25, RHODE ISLAND. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. CD 1/16/61.

BUILDINGS—LB & CA

▲† **Dawson, Johnson & Kibler, Inc.**, 807 Congress St., Portland, Me., LB **$1,655,028**, est. $1,550,000 (27 bidders), RADIO DIRECTION FINDER, U. S. Naval Security Group Activity, NBy 33349, Spec. 33349/60, WINTER HARBOR, ME. Dist. P. Wks. Office, First Naval Dist., 495 Summer St., Boston 10, Mass. BA 5/19. CD 4/27/61.

▲ **M. S. Kelliher Co.**, 10 Tremont St., Boston, Mass., LB **$3,877,000**, STUDENT UNION, Proj. No. Mass 19 CH-44, BOSTON, MASS. Boston University, 688 Boylston St., Boston, Mass. BA 5/23. CD 5/5/61.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ **N. Y., Buffalo**—BA 6/15—Erie County Sewer District No. 1, Dpt. P. Wks., Rm. 711, 45 Church St., SEWERS, Towns of West Seneca and Cheektowaga. $2,400,000. Plans deposit $75. Nussbaumer Clarke & Velzy, 327 Franklin St., Zone 2, engrs. CD 4/17/61.

▲† **Pennsylvania and New Jersey**—BA 6/21—U. S. Eng., 2635 Abbottsford Rd., Phila., Pa., DREDGING Delaware River, between opposite Cornwell Heights, Pa. and Beverly, N. J., ENG-36-109-61-50. $3,000,000. CD 9/29/59.

▲† **Pennsylvania and New Jersey**—BA 7/6—U. S. Eng., 2635 Abbottsford Rd., Phila., Pa., DREDGING 4 mi. sect. Delaware River between the Burlington-Bristol Bridge and Pennsylvania Turnpike Bridge. $5,000,000. CD 9/29/59.

BUILDINGS—BA

▲ **N. Y., New York**—BA 6/15—Deputy Supt. of Schools, Bureau Constr., 42-15 Crescent St., 4th Floor, Long Island City, Zone 1, Proj. E-459, general constr., plumbing and drainage, heating and ventilating, PUBLIC SCHOOL 154, W 127 St. and 8 Ave., Manhattan Boro. $2,400,000. Plans deposit $25, general $10 each for mechanical trades. CD 2/3/61.

▲ **N. Y., Sea Cliff**—BA 6/15—Bd. Educ. North Shore Schools, general contract, mechanical, electrical North Shore JUNIOR HIGH SCHOOL ADDN., Kissam Lane, Glen Head. $1,725,000. Plans deposit $50. Perkins & Will, 55 Church St., White Plains, archts. Seelye, Stevenson, Value & Knecht, 101 Park Ave., New York, Zone 17, struct. engrs. Segner & Dalton, 55 Church St., White Plains, mech. engrs. CD 5/5/61.

▲ **N. Y., New Rochelle**—BA 6/28—City, 515 Main St., converting Junior High School into CITY HALL. $2,900,000. Fred W. Lyon, 299 North Ave., New Rochelle, N. Y. and Knappe & Johnson, 2110 Northern Blvd., Manhasset, N.Y., archts. Abrams & Moses, 2 Hamilton Ave., New Rochelle, N. Y., mech. engrs. Fromme & Vosganian, 56 W. 45 St., New York 36, N. Y., struct. engrs. CD 4/10/61.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, ROADS,
Johnson, Drake & Piper, Inc., 86 Trinity Pl., New York 6, N. Y., CA **$6,099,951**, est. $7,356,000, c. conc. pavement 3.34 mi. Interstate Rte. Conn 590, Powerline Expressway Sect. 2, Contr. 1, (Millersport Hy. to Main St.) Proj. 290-1(41) Contr. FIPLE 61-1, Erie Co.; CA **$1,278,670**, est. $1,280,000, b. conc. 1 span rein.-con. rigid frame bridge 1.88 mi. City of Newburgh, south St. Art. Hy. Proj. U 543 (10) Contr. FAC 61-7, Orange Co. BA 4/27. CD 4/28/61, under LB.

BUILDINGS—LB & CA

▲ **Cauldwell-Wingate Co., Inc.**, 101 Park Ave., New York 17, N. Y., CA Est. **$35,000,000**, eight 19 story 150,000 sq. ft. Lafayette APARTMENTS, incl. shopping center, eight city blocks, Morrison and Lafayette Aves., Boynton and Story Aves., Bronx Boro, NEW YORK, N. Y. Lafayette-Morrison Housing Corp., 477 Madison Ave., New York 22, N. Y., Pomerance & Breines, 630 3 Ave., New York 17, N. Y., archts.

▲ **S. S. Silberblatt, Inc.**, 25 West 45 St., New York 19, N. Y., CA **$5,775,000**, fdns. and general contract Rutgers HOUSES, Proj. No. NYS-80, Madison St., Rutgers St., Cherry St. and Pike St., NEW YORK, N. Y. New York City Housing Auth., Rm. 312, 299 Broadway, New York 7, N. Y. BA 4/27, CA 5/16. CD 5/1/61, under LB;
Lipsky & Rosenthal, Inc., 112 St. and Madison Ave., New York 29, N. Y., CA **$857,000** PLUMBING, Rutgers Houese (New York, N. Y.).

▲ **Slattery Contg. Corp.**, 46-36 54 Rd., Maspeth, N. Y., CA **$8,172,000**, Proj. P-426, Contr. 159, general contract underground Lincoln Square GARAGE, bridge, public plaza at Lincoln Center for Performing Arts, Broadway, Amsterdam Ave., W.62 to W.65 Sts., Manhattan Boro, NEW YORK, N. Y. Comr. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York 21, N. Y. Grand Total $9,406,000. BA 4/19 CD 4/21/61, under LB;
Eugene Duklaver, Inc., 6th Ave. between W. 51 and 52 Sts., New York 19, N. Y., CA **$540,000**, Contr. 539, plumbing underground Lincoln Square GARAGE (New York, N. Y.);
Nager Elec. Co., Inc., 426 Broadway, Brooklyn 11, N. Y., CA **$694,000**, Contr. 259, ELECTRICAL WORK underground Lincoln Square GARAGE (New York, N. Y.).

▲ **Perini Corp.**, 73 Mountwayte Ave., Framingham, Mass., LB **$7,244,000**, CIVIC CENTER COURTS BLDG., ROCHESTER, N. Y. Rochester-Monroe County Civic Center Comn., Monroe County Purchasing Agent, Monroe County Court House, Rochester, N. Y. BA 5/18. CD 3/30/61.

▲ **Irwin & Leighton, Inc.**, 1505 Pace St., Phila., Pa., CA Est. **$5,000,000**, RESEARCH LABORATORY, HIGHTSTOWN, N. J. National Lead Co., 111 Broadway, New York, N. Y. BA 4/19/61. CD 4/20/61.

▲ **Essential Constr. Co., Inc.**, 1325 Inwood Terrace, Fort Lee, N. J., LB **$2,839,784**, DORMITORIES, Bishop Campus, NEW BRUNSWICK, N. J. Rutgers University, College Ave., New Brunswick, N. J. BA 5/16/61. CD 4/18/61.

▲ **Dan McCarron & Son**, 550 Pine St., Elizabeth, N. J., CA general contract EAST WING only of new BLDG., Roselle Catholic Boys High School, N. E. corner Pine St., Raritan Rd., ROSELLE, N. J. Office of Vicar General, Archdiocese of Newark, 33 Mulberry St., Newark, N. J. Total est. $1,500,000. BA 5/11/61, CD 4/6761;
Fred Wendel, Inc., Sunflower Ave., Paramus, N. J., CA plumbing contract, EAST WING of new BLDG., (Roselle, N. J.);
Langfeldt Heating & Ventilating Corp., 210 43rd St., Union City, N. J., CA heating and ventilating contract, EAST WING of new BLDG., (Roselle, N. J.);
Acme Elec. Co., Inc., 211 Bond St., Elizabeth, N. J., CA electric contract EAST WING of new BLDG., (Roselle, N. J.).

▲† **Paul Tishman Co.**, 21 E.70 St., New York, N. Y., CA **$7,737,987**, LABORATORY and BOILER PLANT, National Bureau of Standards, GAITHERSBURG, MD. General Services Admin., Rm. 7122, GSA Regional Office Bldg., 7 and D Sts. S. W., Wash., D. C. BA 4/19. CD 4/21/61 under LB.

SOUTH

HEAVY CONSTRUCTION—BA

▲ **Tenn., Chattanooga**—BA 6/13—City, City Hall, Contr. 25, SEWAGE TREATMENT PLANT ADDN. $2,000,000. Plans deposit $40. Havens & Emerson, 233 Broadway, New York, N. Y., engrs. CD 5/5/61.

BUILDINGS—BA

▲ **Tenn., Nashville**—BA 6/15—Vanderbilt University, 21st Ave. S., 240 units, 11 stories each, two APARTMENTS. $3,000,000. Plans deposit $250. Brush, Hutchison & Gwinn, 1719 West End Bldg., archts. CD 1/13/61.

BUILDINGS—SLC

▲ **Fla., West Palm Beach**—Diocese of Miami, 6301 Biscayne Blvd., Miami, soon lets contract Catholic HIGH SCHOOL, classroom, cafetorium and convent. $1,500,000. Thomas J. Madden, Jr., 240 NE 17th St., Miami, archt. N. J. Dignum & Assocs., 260 Palermo Ave., Coral Gables, struct. engrs. R. L. Duffer & Assocs., 3356 Virginia St., Miami, mech. engrs.

HEAVY CONSTRUCTION—LB & CA

▲ **NORTH CAROLINA**—State Hy. Comn., Capitol Bldg., Raleigh, ROADS,
Nello L. Teer Co., Trust Bldg., Durham, N. C. CA **$1,641,372**, Proj. 8.14904, grading, paving Raleigh Belt Line, Wake Co.; CA **$538,130**, Proj. 8.12003 relocating US Rte. 70 between N.C. Rte. 24 and Morehead City, Carteret Co. BA 4/25/61. CA 4/28/61, under LB.

▲ **KENTUCKY and OHIO**—Commonwealth of Ky., Dpt. Hys., Frankfort, Ky., BRIDGE,
U. S. Steel Corp., Rm. 3004, 525 William Penn Pl., Pittsburgh, Pa., CA **$3,877,892**, bridge (superstructure) over Ohio River between Covington, Ky. and Cincinnati, O., 0.328 mi. EI 75-8 (11) 190, SP 59-315, Kenton Co., Ky. BA 5/12, CA 5/18. CD 5/16/61, under LB.

▲ **TENNESSEE**—State Hy. Dpt., Nashville, ROADS,
Tenn.—**Oman Constr. Co.**, Acklen Park, Nashville, Tenn., CA **$1,323,704**, grading, crushed stone and penetration macadam base, bit. materials (plant mix) paving, bridges, 2.214 mi. Proj. Nos. U-082-1(2), and US-2369(3), Sullivan Co.,
Tenn.—**S & W Constr. Co.**, 2630 Midland Ave., Memphis, Tenn., CA **$1,559,242**, grading, constr. 7 bridges, 5.633 mi. Proj. No. I-65-1(6)2, Giles Co. BA 4/28/61, CA 5/9/61. CD 5/5, under LB.

BUILDINGS—LB & CA

▲ **Highland Homes, Inc.**, 848 Riverside Dr., Macon, Ga., Owner Builds, **$2,250,000**, 150 RESIDENCES, MACON, GA.

▲ **Frank J. Rooney, Inc.**, 5880 N.E. 4th Ave., Miami, Fla., CA Est. **$10,000,000**, 54 story SHOPPING CENTER, KENDALL (BR. MIAMI), FLA. Dadeland Shopping Center, c/o Joseph Meyerhoff, 1300 National Bank Bldg., Baltimore, Md. CD 5/17/61.

▲ **John Rissman & Son, Inc.**, 2360 N.W. 183rd St., Miami, Fla., Owner Builds, approx. **$2,000,000**, 286 units 6 APARTMENTS and pools, N.E. 126th St. and 16th Ave., NORTH MIAMI, FLA. Gilbert M. Fein, 1048 Kane Concourse, Bay Harbor Islands (Miami Beach), Fla., archt.

▲ **Wiggs & Maale Constr. Co.**, P.O. Box 2154, Palm Beach, Fla., CA **$1,569,500**, 142 units, Group A. LaFontana Cooperative APARTMENTS, WEST PALM BEACH, FLA. J & N Constr. Co., 941 N.E. 79th St., Miami, Fla. CD 4/11/61, under LB.

▲ **Daniel Constr. Co. of Alabama**, 822 7 Ave. S., Birmingham, Ala., CA general contract 6 story, 175 x 140 ft. CAST HOUSE, PLANT ADDN., SHEFFIELD, ALA. Reynolds Metals Co., 2591 S. 3 St., Louisville, Ky. Total est. over $2,500,000.
Rust Furnace Co., 930 Fort Duquesne Blvd., Pittsburgh., Pa., CA, 2 HOLDING FURNACES (80,000 lb. capacity), 2 MELTING FURNACES (100,000 lb. capacity) (Sheffield, Ala.).

MIDDLE WEST

BUILDINGS—BA

▲ **Ill., Northbrook**—BA 6/8—Northfield Twp. High School Dist. 225, 2300 Shermer Rd., Glenbrook HIGH SCHOOL S. Landwehr Rd. and Lake Ave., $3,850,000. Nicol & Nicol, 23 E. Jackson Blvd., Chicago, Zone 4, archts. CD 10/27/60.

▲ **O., Cincinnati**—BA 6/22—Cincinnati Metropolitan Housing Authority, 595 Armory Ave., twelve 2 story, hi-rise APARTMENTS, Linn St. $4,350,000. Plans deposit $40. Potter, Tyler, Martin & Roth, 128 E. 6th St., archts. Bodenstein & Shuster, 9th and Main Sts., engrs. CD 10/21/60.

▲ **Ill., Peoria**—BA 8/1—Peoria Public Schools, 3202 Wisconsin Ave., MANUAL HIGH SCHOOL, $3,500,000. Jameson-Harrison, Madison Theatre Bldg., archts. CD 1/30/61

HEAVY CONSTRUCTION—LB & CA

▲ **William E Schweitzer & Co.**, 2207 Dodge Ave., Evanston, Ill., LB **$2,026,417** (13 bidders), No. 80.68-61-5, ELEVATED HIGHWAY STRUCTURE, South Rte. Expressway and 28th Pl., CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. BA 5/17/61. CD 4/26/61.
American Bridge Div. U. S. Steel Corp., 208 S. La Salle St., Chicago 4, Ill., LB **$1,794,220** (5 bidders), No. 80.68-61-6, STRUCTURAL STEEL for ELEVATED HIGHWAY STRUCTURE, South Rte. Expressway and 28th Pl., (Chicago, Ill.)

▲ **William E. Schweitzer & Co.**, 2207 Dodge Ave., Evanston, Ill., CA **$1,709,000**, No. 80.85-61-140, United Airlines HANGAR EXTENSION, CA **$298,125**, CONCRETE PAVING, United Airlines Hangar site, O'Hare Airport, Park Ridge, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. BA 5/1/61, CA 5/17/61. CD 5/8/61, under LB.

BUILDINGS—LB & CA

▲ **Wargo Realty, Inc.**, 5466 Pearl Rd., Cleveland, O., Owner Builds, **$4,000,000**, 180 HOMES, Sagamore Hills Estates, Sagamore Twp. between Brecksville and Northfield Center, BRECKSVILLE, O. William J. Gabriel, 3725 Lee Rd., Cleveland, O., archt.

▲ **Forest City Enterprises, Inc.**, 700 Marshall Bldg., Cleveland, O., Owner Builds, $3,500,000, twenty-seven Valley Forge Villas GARDEN APARTMENTS, York Rd., PARMA, O. Marvin J. Rukin, 13947 Cedar Rd., South Euclid, O., archts.

▲ **Cook-Johnson Enterprises**, Mahoning Bank Bldg., Youngstown, O., Owner Builds, **$5,000,000**, 252 HOMES, on 100 acre site, S. Raccoon Rd., Austintown Twp. YOUNGSTOWN, O.

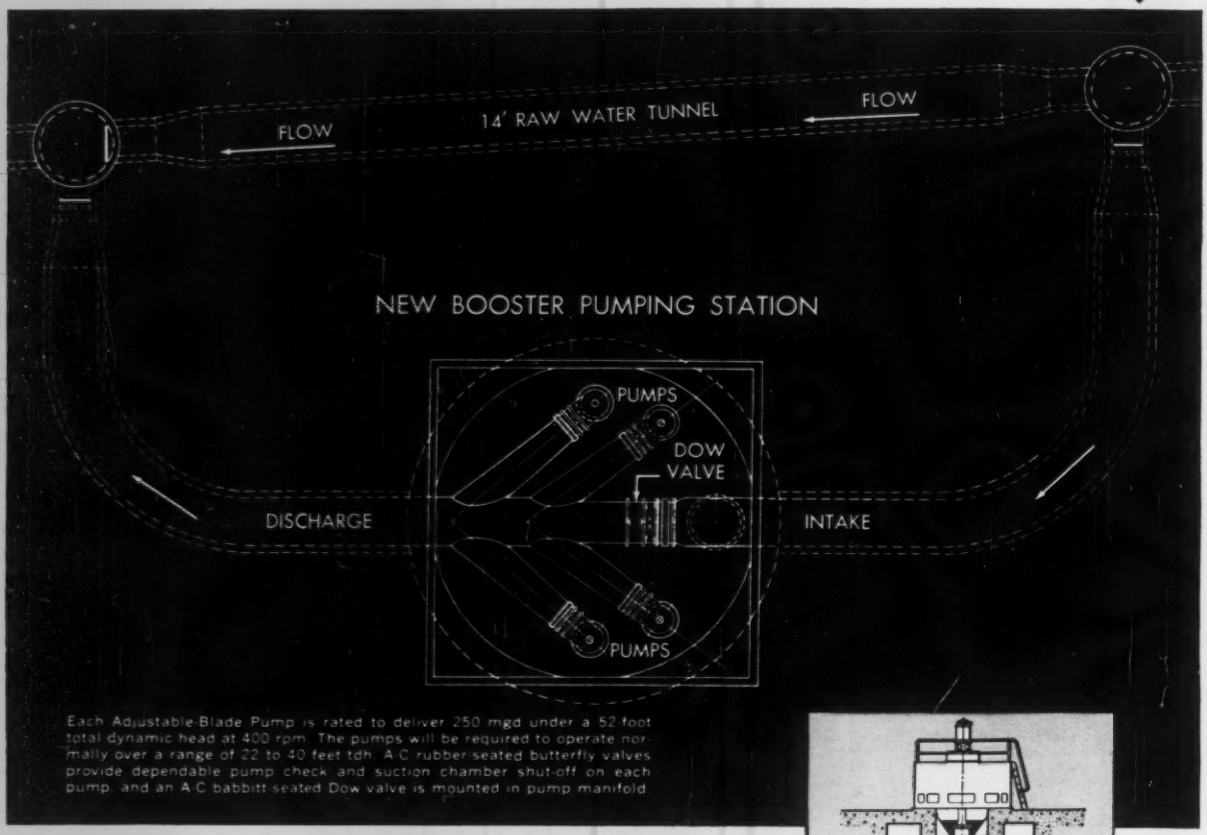
▲ **Zook Builders, Inc.** c/o Kenneth Zook, Elkhart, Ind., Owner Builds, **$5,000,000**, 300 HOMES, 80 acre site near Greene Memorial Hospital, ZENIA, O.

▲ **Chicago Constr. Co.**, 707 Dundee Dr., Northbrook, Ill., Owner Builds, **$5,250,000**, HOMES, Terrace Subdivision east and west of Green Bay Rd., NORTHBROOK, ILL.

▲ **Kuhne-Simmons Co.**, 106½ S. Neil St., Champaign, Ill., CA **$3,069,900**, RESIDENCE HALLS, Pennsylvania Ave., URBANA, ILL. University of Illinois, Rm. 256 Administration Bldg., Urbana, Ill. BA 4/4/61, CA 5/17/61, CD 4/28/61, under LB;
Economy Piping Contractors, Inc., 1308 S. Pulaski Rd., Chicago, Ill., CA **$538,860**, HEATING CON-

(Continued on page 65)

ALLIS-CHALMERS



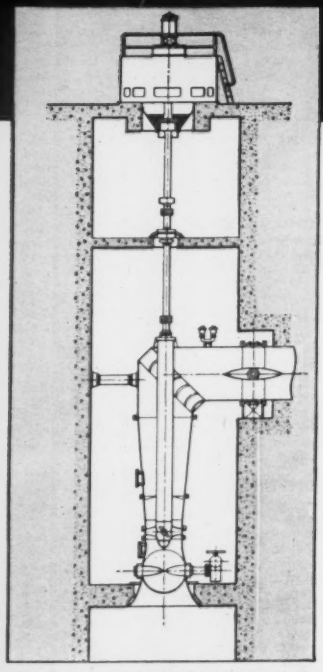
Each Adjustable-Blade Pump is rated to deliver 250 mgd under a 52-foot total dynamic head at 400 rpm. The pumps will be required to operate normally over a range of 22 to 40 feet tdh. A-C rubber-seated butterfly valves provide dependable pump check and suction chamber shut-off on each pump, and an A-C babbitt-seated Dow valve is mounted in pump manifold.

A-C Adjustable-Blade Pumps help City of Detroit augment raw water supply!

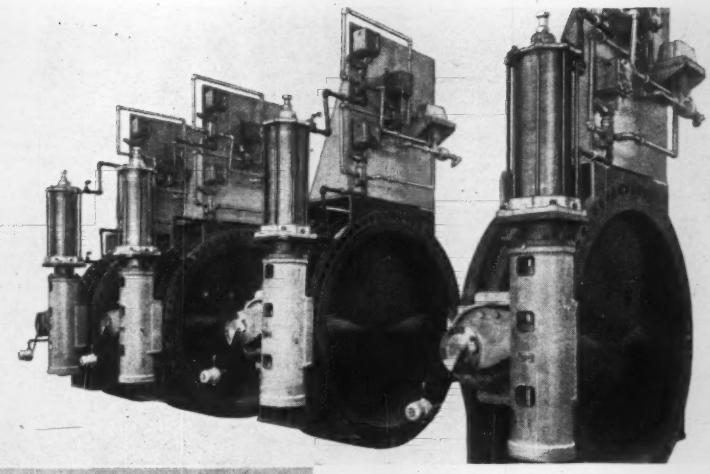
To augment the supply of raw water, Detroit, Michigan has installed four A-C Adjustable-Blade Pumps in a new booster pumping plant near the Detroit River. Pumps of this type were selected for their rapid, smooth response, under automatic control, to a wide range of flow demands.

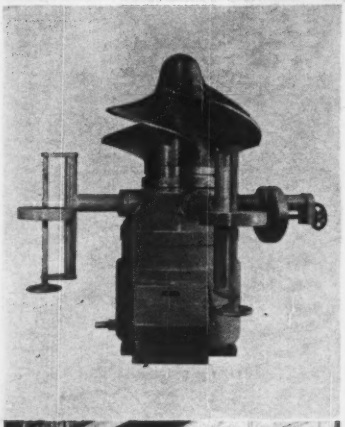
Adjustable-Blade Pumps will vary in output to meet the gradual changes in flow requirement as compared to stepped increments of flow and possible surges which would result if fixed-blade pumps had been installed.

Two of these pumps will operate when required to raise the hydraulic grade line and supply adequate raw water to two remotely located treatment stations. As demand increases, a third pump will be used. A fourth pump is available for standby service. Pump blade angles are controlled automatically by a positioner responsive to downstream hydraulic grade line. A-1488



You may obtain full information on A-C Adjustable and Fixed-Blade High Capacity Axial Flow Pumps and Valves by writing to Allis-Chalmers, Hydraulic Division, York, Pennsylvania.

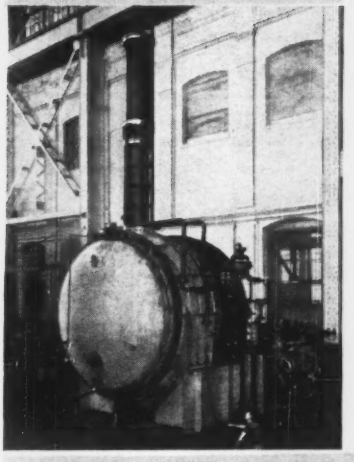




Four Allis-Chalmers 90-inch 50-16 fabricated steel butterfly valves used for pump check. These valves are equipped with the A-C full body rubber seat for dependable bubble-tight shut-off. Hydraulic cylinders, mounted on rugged crosshead mechanisms, provide smooth automatic operation.

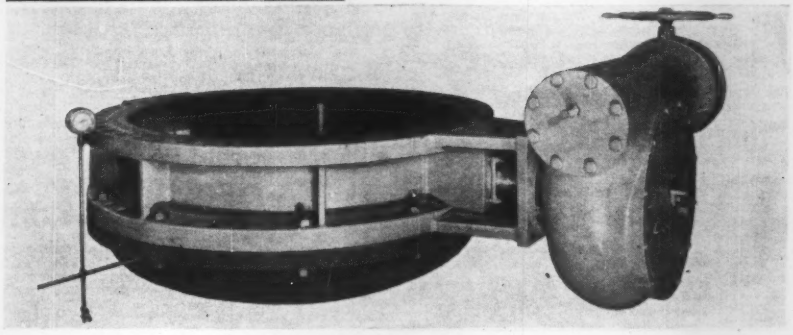
A-C adjustable-blade pump impellers are dynamically balanced after complete shop assembly and blade finishing.

ALLIS-CHALMERS



Allis-Chalmers 144-inch Dow valve with fabricated steel body and hydraulic operator provides tight closure in both directions. When valve is open, flow bypasses pumps or is diverted to pump sumps when valve is closed.

One of four A-C 72-inch AWWA Class 50-16 fabricated steel butterfly valves used on pump suction. These valves are equipped with the A-C full body rubber seat and A-C manual operator. This valve is shown being tested with 50 psi air under water to insure bubble-tight shut-off.



(Continued from page 63)

TRACT for Pennsylvania Ave. Residence Halls, (Urbana, Ill.). CD 4/11/61, under LB.

▲ **Edward Gray Corp.**, 12233 S. Ave. O, Chicago, Ill., CA **$3,500,000**, thirty-two 10 story APARTMENTS, 1616 Sheridan St., WILMETTE, ILL. Morris A. Pancoe, 1018 S. Wabash Ave., Chicago 5, Ill. A. Epstein & Sons, 2011 Pershing Rd., Chicago, Ill., archts. CD 8/5/58.

▲ **Henry C. Beck**, Forest Lane Dallas, Tex., CA Est. **$2,500,000**, 8 story MOTEL, MADISON, WIS. Madison Park Realty Co., 124 E. Main St., Ottumwa, Iowa.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲† **Minnesota**—BA 6/13—U. S. Eng., 1217 U. S. Post Office & Custom House, St. Paul, Zone 1, LOCAL FLOOD PROTECTION PROJ., Stage I, right bank of Mississippi River near Chester St., St. Paul, CIVENG-21-018-61-32. $2,000,000. CD 5/9/61.

BUILDINGS—BA

▲ **Tex., Dallas**—BA 6/13—Dallas Ind. School Dist., 3700 Ross Ave., Franklin D. Roosevelt HIGH SCHOOL, Bonnie View Rd., $1,800,000. Extended date. Collins & Drydon & Associates, 2921 Fairmount St., and Mark Lemmon, 3211 Southland Center, archts. Hunt & Joiner, 4512 N. Central Expressway, and Gregerson & Gaynor, 3010 Blackburn St., engrs. CD 5/9/61.

Colo., Denver—BA 6/15—General Rose Memorial Hospital, 9th and Cherry, 7 story, 260 x 123 ft. 385-bed HOSPITAL ADDN., ALTERATIONS. $1,800,000. E. Todd Wheeler & Perkins & Will, 309 W. Jackson, Chicago, Ill., archts. Baume & Polivnick, 1225 Bannock, Denver, Colo., assoc. archts. Ketchum, Knokel & Hastings, 730 Kalamath, Denver, Colo., struct. engrs., Clint Cator Co., 1480 Hoyt, Denver, Colo., mech. engrs. Swanson Rink & Assocs., 1640 Boulder, Denver, Colo., elec. engrs., CD 2/3/59.

HEAVY CONSTRUCTION—LB & CA

▲† **G. L. Tarlton Contg. Co.**, 5500 West Park, St. Louis 10, Mo. and J. E. Latta Constr. Co., Inc., 6609 Latta Pl., St. Louis 33, Mo., CA **$3,146,710**, est. $2,929,565, five PUMPING STATIONS and SEWER ALTERATIONS, Flood Protection, Proj. Items P-4 and S-4, St. Louis, CIVENG-23-065-61-61, MISSOURI. U. S. Eng., 420 Locust St., St. Louis 2, Mo. BA 4/13, CA 5/16. CD 4/18/61, under LB.

▲† **Gross, Hans, Petersen, Inc.**, P.O. Box 167, Marysville, Kan., CA **$1,870,849**, RELOCATING Missouri-Kansas-Texas R.R. track, in connection with Eufaula Reservoir, ENG-34-066-61-81, OKLAHOMA. U. S. Eng., 616 S. Boston Ave., Tulsa, Okla. BA 4/19/61. CD 5/2/61, under LB.

▲† **J. A. Tobin Constr. Co.**, Minnesota Ave., Kansas City, Kan., CA **$2,443,051**, RELOCATING U. S. HY. 69 and M. K. & T. Ry. tracks, Schedule 3, Eufaula Dam, OKLAHOMA. U. S. Eng., Box 61, Tulsa 2, Okla. BA 4/13/61. CD 5/3/61, under LB.

▲† **M. T. Reed Constr. Co.**, 162 Millsaps Ave., Jackson, Miss., and **Boyd Constr. Co.**, P. O. Box 822, Grenada, Miss., CA **$3,749,570**, Two Rivers, RESERVOIR PROJ., Rio Hondo Roswell, Chaves Co., ENG-29-005-61-9B, NEW MEXICO. U. S. Eng., P. O. Box 1538, Albuquerque, N. M. BA 5/9/61. CD 5/16/61, under LB.

BUILDINGS—LB & CA

▲ **Bd. Educ. Special School Dist. No. 2**, 628 City Hall and Courthouse, St. Paul, Minn., rejected bids general contract and mechanical work Harding HIGH SCHOOL near Fremont Ave. and Hazelwood St., ST. PAUL, MINN. LB **$2,531,000** general, LB **$702,600** mechanical work. Will re-advertise. CD 5/9/61, under LB.

▲ **Ringland-Johnson Inc.**, 820½ Locust St., Des Moines, Iowa, CA **$1,942,779**, general contract 3 story, steel, glass plaza type HEADQUARTERS, OFFICES, DES MOINES, IOWA. Home Federal Savings & Loan Assn., 6th and Grand Sts., Des Moines, Iowa. Ludwig Mies van der Rohe, 230 E. Ohio St., Chicago, Ill., and Smith-Voorhees-Jensen Associated Architects, Davidson Bldg., Des Moines, Iowa, archts.; **Iowa Sheet Metal Contractors Inc.**, 2601 Bell St. Des Moines, Iowa., CA **$432,030**, HEATING and AIR-CONDITIONING HEADQUARTERS OFFICES, (Des Moines, Iowa.)

▲ **C. Rallo Contg. Co.**, 5000 Kemper Ave., St. Louis 39, Mo., CA **$1,925,000**, four-4 story RESIDENCE HALLS, one for 210 women and three for 282 men each, east of Big Bend Blvd. between Forsyth and Wydown Blvds., Proj. CH MO-60(D), ST. LOUIS, MO. Washington University, Lindell and Skinker Blvds., St. Louis 30, Mo. BA 5/11. CD 5/19/61, under LB.

▲ **Herbert Building & Development Corp.**, 5710 McKnight St., Houston, Tex., Owner Builds, $2,125,000, 100 DWELLINGS, Park-West Sect. and Westbury Subdivision, HOUSTON, TEX.

▲ **Joseph J. Johnson, Developer-Builder**, 12303 Perthshire St., Houston, Tex., Owner Builds, $4,250,000, 100 DWELLINGS, Memorial area and new Memorial Glen Subdivision, HOUSTON, TEX.

▲ **H. A. Lott**, P. O. Box 25005, Houston, Tex., CA **$1,667,569**, four ELEMENTARY SCHOOLS, sites, Hirsch and Fairbanks Sts., Rickfair St. north of Octavia; Braeburn Valley and Carew and Millwee and Costa Rica Sts., HOUSTON, TEX. Houston Ind. School Dist., 1300 Capitol Ave., Houston, Tex. BA 5/2/61. CD 4/17/61.

▲ **G. W. Mitchell**, P.O. Box 8308, San Antonio, Tex., LB $1,695,000 (9 bidders), C, D, F, G, H, I and J

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Units of SHOPPING CENTER, SAN ANTONIO, TEX. McCreless Properties, Ltd., 3522 S. New Braunfels Ave., San Antonio, Tex. Phillip Lloyd & Shoop, 122 Olmos Dr. W., and Noonon & Krocker, 2002 N. St. Marys St., San Antonio, Tex., archts. Oscar Schuchart, 3360 Fredericksburg Rd., and Paul G. Silber, Jr., 150 Olmos Dr. W., San Antonio, Tex., engrs. BA 5/16/61. CD 8/16/60.

▲ **United Engineering & Foundry Co.**, 948 Fort Duquesne Blvd., Pittsburgh, Pa., CA Est. **$15,000,000**, parallel wide flange beams rolling MILL, PUEBLO, COLO. Colorado Fuel & Iron Corp., Continental Oil Bldg., Denver, Colo. CD 9/15/59.

FAR WEST

HEAVY CONSTRUCTION—BA

▲ **Nev., Las Vegas**—BA 6/13—Comrs., Clark Co. Court House, AIRPORT EXPANSION, incl. 2 story passenger terminal, McCarran Field, $5,000,000. Welton Becket & Associates, 5657 Wilshire Blvd., Los Angeles, Calif., archts. CD 9/30/60.

▲† **Calif., Point Mugu**—BA 6/26—11th Naval Dist. P. Wks., 1220 Pacific Hy., San Diego, Zone 1, LAUNCH COMPLEX NO. 2 to incl. 1 block house, 3 launch pads, technical support bldgs., etc., Naval Missile Facility, Point Arguello, Spec. 36856. Over $5,000,000. CD 1/12/61.

BUILDINGS—BA

▲ **Utah, Provo**—BA 6/13—Brigham Young University, Dir. Plans & Development, 865 North 7th St. East, 6 level, 300x480 ft., stone, glass, brick STUDENT CENTER. $4,000,000. Plans deposit $150. Fred L. Markham, 35 North University Ave., archt. CD 3/14/60.

▲ **Utah, Provo**—BA 6/22—Brigham Young University, 865 North 7th East, 462 units MARRIED STUDENTS HOUSING, Brigham Young University. $5,000,000. Plans deposit $100. Smith & Needham, 1057 East 9th South, Salt Lake City, Zone 5, archts. CD 3/2/61.

HEAVY CONSTRUCTION—LB & CA

▲† **B-E-C-K, McLaughlin & Assocs.**, 3647 Stone Way, Seattle 3, Wash., CA **$3,442,730**, REHABILITATE RUNWAY, TAXIWAY, ROADS, PIER, POL SYS., fire station and control tower, Shemya Air Force Station, Inv. 61-56, SHEMYA, ALASKA. U. S. Eng., P.O. Box 7002, Anchorage, Alaska. BA 5/9. CD 4/19/60.

▲ **Morrison Knudsen Co.**, 319 Broadway, Boise, Idaho, LB **$2,000,448**, (3 bidders), two WATER STORAGE DAMS, Tolt River Watershed, SEATTLE, WASH. Bd. P. Wks., County City Bldg., Seattle, Wash. BA 5/17/61. CD 5/4/61.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St. Los Angeles, Bids opened 5/18, ROAD,
Hazard & Maxwell, P.O. Box 3217, Hillcrest Station, San Diego, Calif., LB **$7,363,972**, (5 bidders), grading, paving 1.8 mi. eight lane freeway US Hy. 101 between Market St. and Park Blvd. in San Diego, incl. 36 structures, San Diego Co. CD 4/5/61.

BUILDINGS—LB & CA

▲ **Bettilyon, Inc.**, 333 2nd E., Salt Lake City, Zone 11, Utah, CA **$3,612,134**, Skyline HIGH SCHOOL, SALT LAKE CITY, UTAH. Granite School Dist., 340 East 3545 South, Salt Lake City 15, Utah. BA 5/16/61. CA 5/17/61. CD 5/22/61, under LB.

▲ **Dru-Colachis Development Co.**, 222 W. Osborn, Phoenix, Ariz., Owner Builds, **$4,000,000**, 22 story Executive Towers APARTMENT-HOTEL, S.W. corner of Second Ave. and Clarendon, PHOENIX, ARIZ. Alan A. Dalls & Assocs., 1023 E. Camelback Rd., Phoenix, Ariz., archts.

▲ **J. I. Barnes Constr. Co.**, 13549 Aurora Ave., Seattle 33, Wash., LB **$2,325,000** (7 bidders), 7 story, 125,000 sq. ft. LIBRARY ADDN., SEATTLE, WASH. University of Washington, 15th Ave. N.E. and E. 40th St., Zone 5, Seattle, Wash. BA 5/18/61. CD 4/19/60.
W. A. Bottling, 5625 University Way, Seattle, Wash., LB **$779,417**, MECHANICAL CONTRACT, for library addn. (Seattle, Wash.)

▲ **W. J. Straith Co.**, 413 3rd Ave. W., Seattle, Wash., CA Est. **$2,500,000**, rein.-con., masonry MILK PROCESSING and ICE CREAM PLANT ADDN., SEATTLE, WASH. Consolidated Dairy Products Co., 4058 Rainier Ave., Seattle, Wash. CD 2/16/61.

▲† **J. W. Bateson**, 10130 Monroe Dr., Dallas, Tex., LB **$7,275,944** Base Bids, (5 bidders), 500 unit CAPEHART HOUSING, Unit 4, ENG-61-280, FORT ORD, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. BA 5/17. CD 5/5/61.

▲ **Pacific Coast Builders**, 1 South Park St., San Francisco, Calif., CA **$3,477,777**, 328 units Hayes Valley HOUSING, 4 sites, Proj. CAL 1-18(7), SAN FRANCISCO, CALIF. City and San Francisco County Housing Auth., 440 Turk St., San Francisco, Calif. BA 4/27. CD 5/4/61, under LB.

▲ **Robert E. McKee**, 4701 San Fernando Rd., Los Angeles, Calif., CA **$4,999,600**, est. $5,784,935 OUT-PATIENTS BLDG., Los Angeles County General Hospital, LOS ANGELES, CALIF. Los Angeles Co., 501 Hall of Records, Los Angeles Calif. Froelich, Hannold & Rex, 9026 Melrose Ave., Los Angeles, Calif., archts. BA 5/3, CA 5/16. CD 5/5/61, under LB.

▲ **Larkwood Estates**, 16901 S. Western Ave., Gardena, Calif., Owner Builds **$2,500,000**, 157 frame DWELLINGS, Tidwell Ave., Marlington Dr., Ocean Ave., Richvale Dr., Tract 25796, NORWALK, CALIF.

CANADA

HEAVY CONSTRUCTION—BA

▲ **Ont., Toronto**—BA 6/6—Municipality of Metropolitan Toronto, 67 Adelaide St. E., rein.-con., structural steel ELEVATED STRUCTURE, F. G. Gardner Expressway, Spadina Ave. to Rees St. and Lake Shore Blvd., eastbound. $2,500,000. Plans deposit $100. Lakeshore Expressway Consultants, 30 Eglinton Ave., E., engrs.

HEAVY CONSTRUCTION—LB & CA

▲ **Richard and B. A. Ryan Ltd. and Atlas Constr. Co., Ltd.**, 4781 St. Catherine St. W., Montreal, Que., CA Est. **$1,750,000**, (6 bidders), HEATING PLANT, SUBSTATION, PUMPHOUSE, TAILING PLANT TUNNEL, UNDERGROUND YARD SERVICES, part of Iron Ore Beneficiating Plant, CAROL LAKE, LABRADOR. Iron Ore Co. of Canada, 810 Cote de Liesse Rd., Monteral, Que. BA 4/17/61. CD 3/30/61.

▲ **Foundation Co. of Canada Ltd.**, 1220 Bay St., Toronto, Ont., CA **$1,530,023**, CAR PARKING AREA, roads, curbs, sidewalks, walls, water mains, lighting, bridges, sewers, Toronto International Airport, TORONTO, ONT. Dpt. Transport, Hunter Bldg., Ottawa, Ont. BA 4/20/61. CD 4/27/67, under LB.

BUILDINGS—LB & CA

▲ **Commonwealth Constr. Co., Ltd.**, 700 Taylor St., Vancouver, B. C., LB **$1,568,078**, (8 bidders), 100-bed rein.-con., brick veneer, terrazzzo HOSPITAL, FORT ST. JOHN, B.C. Sisters of Charity of Providence, Fort St. John, B. C. BA 5/11/61. CD 4/11/61.

▲ **McNamara Constr. Ltd.**, 42 Industrial St., Toronto, Ont., CA Est. **$7,000,000**, 1 story, 250,000 sq. ft. TIRE PLANT, Industrial Park, KITCHENER, ONT. B. F. Goodrich Canada Ltd., 409 Weber St. W., Kitchener, Ont. BA 4/18/61. CD 4/17/61.

▲ **Foundation Co. of Canada Ltd.**, 1220 Bay St., Toronto, Ont., CA Est. **$7,500,000**, 17 story OFFICE, 500 car steel beams, long span steel joists, poured concrete, steel spans PARKING DECK over bus depot, TORONTO, ONT. Promenade Swiss Corp., Ltd., 670 Bayview Ave., Toronto, Ont. CD 1/13/61.

▲ **Louis Donolo, Inc.**, 8320 St. Lawrence Blvd., Montreal, Que., CA Est. **$1,500,000**, 4 story LUXURY MOTEL, built on stilts, Oriental design, Decarie Blvd., MONTREAL, QUE. Ruby Foo's Enterprises Ltd., 7815 Decarie Blvd., Montreal, Que. BA 4/27/61. CD 4/17/61.

▲ **J. L. Guay Ltee**, 6900 Cote des Neiges Rd., Montreal, Que., CA **$2,012,627**, MODERNIZING CITY HALL ANNEX, Gosford St., MONTREAL, QUE. City, City Hall, Montreal, Que. BA 3/29/61. CD 4/4/61, under LB.

AMERICANS ABROAD

HEAVY CONSTRUCTION—LB & CA

▲ **Impresit-Girola-Lodigiani and E. Recchi**, Milan, Italy, CA Est. **$44,000,000**. SADDLE DAM, POWER HOUSE and APPURTENANCES, First Stage, Volta River Proj., Akosombo, GHANA. Govt. of Ghana, Accra, Ghana. BA 2/16. CD 1/27/61.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Mich., New Boston**—Huron Twp. Water Supply, 37290 Huron River Dr., WATER DISTRIBUTION SYS. throughout township. **$1,650,000**. Brender & Brender, Inc., 3911 Newberry Ave., Wayne, consult. engr. Bids about Sept. 1, 1961. CD 4/12/61.

† **N. C., Wrightsville Beach**—Office of Saline Water, Dpt. Interior, Wash., D. C., plans by Lummus Co., 385 Madison Ave., New York, N. Y., Saline Water Conversion Plant. **$1,500,000** (no appropriation).

SEWERS, WASTE DISPOSAL

▲ **Iowa, Evansdale**—City, City Hall, SANITARY SEWERS, **$1,674,000**. Constr. 1962.

▲ **N. C., New Bern**—City, City Hall, SEWAGE TREATMENT PLANT, OUTFALLS, FORCE MAINS and LIFT STATIONS, **$1,972,872**. William C. Olsen & Assocs., 5 Exchange Place, Raleigh, consult. engrs. CD 7/28/60.

AIRPORTS

▲† **Mont., Great Falls**—U. S. Eng., 1519 South Alaskan Way, Seattle, Wash., STRATEGIC MISSILE SUPPORT AREA FACILITIES, Malstrom Air Force Base. **$2,000,000**, funds released.

▲† **Utah, Hill Air Force Base**—U. S. Eng., 180 New Montgomery St., San Francisco, Calif., MISSILE MAINTENANCE FACILITY, Hill Air Force Base, Ogden, **$2,600,000**, (funds released). CD 7/29/60.

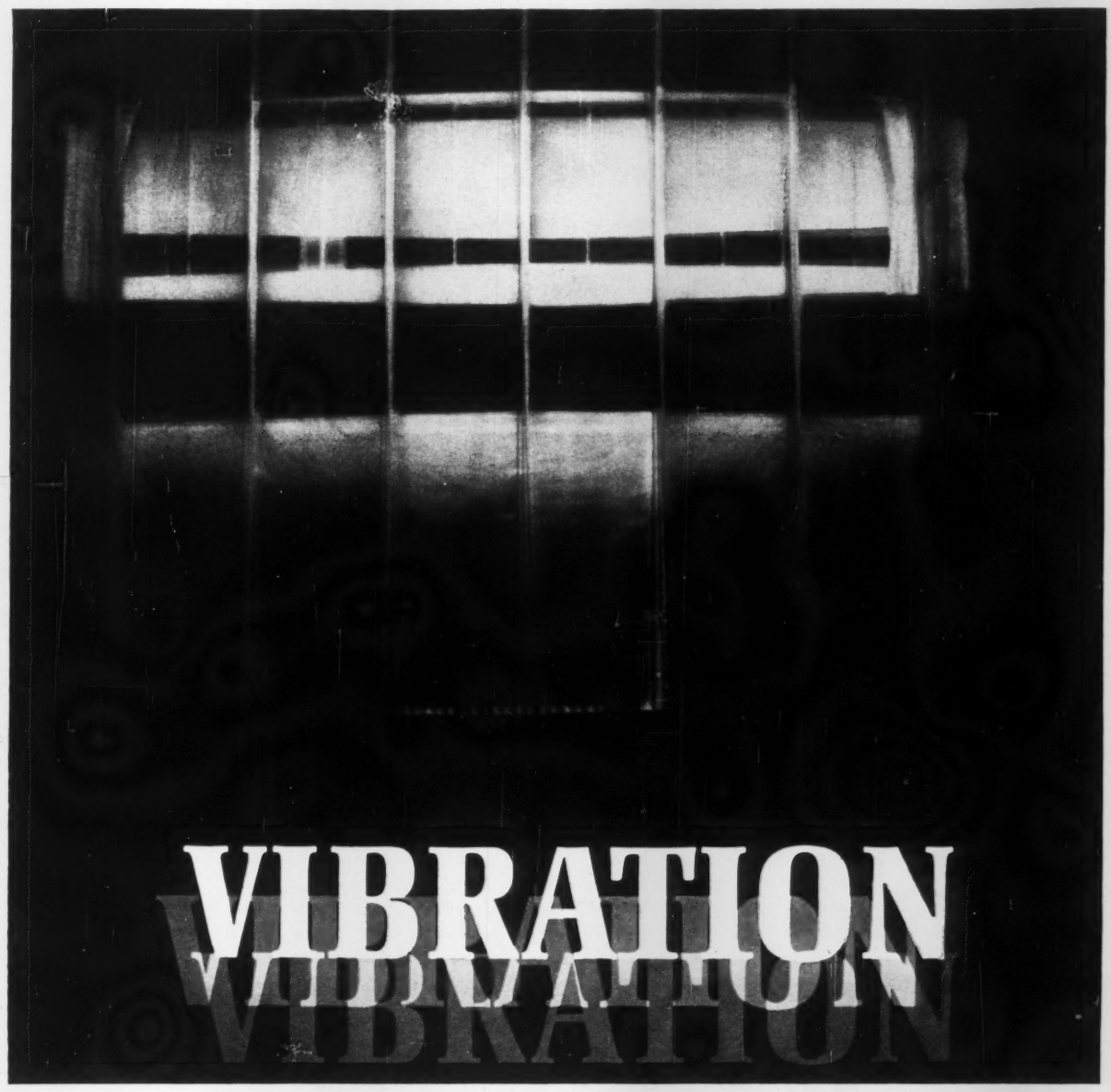
PUBLIC BUILDINGS

▲ **Calif., Monterey**—P. Wks. Officer, 12th Naval Dist., Navy Dpt., San Bruno, plans by Parsons-Vonseb, 617 7 St., Los Angeles, ASTRO AERONAUTICAL PROPULSION LABORATORIES, Naval Postgraduate Schools. **$3,000,000**. CD 12/12/60.

▲ **Conn., Stamford**—Town, Town Hall, plans by Sherwood, Mills & Smith, 65 Broad St., Turn-of-River JUNIOR HIGH SCHOOL, Vine Rd. **$3,100,000**. Tizian Assocs., 567 Summer St., consult. engrs. Fraioli, Blum & Yesselman, 250 E. 43 St., New York, N. Y., structural engrs. Jack L. Staunton, 235 Park Ave. S., New York, N. Y., landscape engr. CD 4/7/60.

▲ **Fla., Everglades**—Bd. Comrs., Collier Co., Courthouse, 2 story, 55,000 sq. ft. COURTHOUSE and JAIL, Naples. **$1,600,000**.

(Continued on page 70)



Buffeting wind. Earth-shaking tonnage of passing vehicles. Impact of internal traffic. Rending and compressing action of joined structural components through constant thermal change.

Only one kind of building sealant is dynamic enough to "live" with these conditions and maintain its integrity. Sealant containing THIOKOL liquid polysulfide polymer, measuring up to or exceeding ASA Specification A 116.1.

Polysulfide-base sealant combines steel-grip bonding with rubbery elasticity. It chemically welds itself to all building materials in any combination, and can expand up to 100% without adhesive failure.

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No cutting, no splicing, no vulcanizing needed. Custom-applied polysulfide type sealant produces a watertight seal—even when joints on the job vary from original design. There is only one polysulfide polymer. And it's made by Thiokol. Shouldn't you include it in your next sealant spec?

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In Canada: Naugatuck Chemicals Division, Dominion Rubber Company, Elmira, Ontario

John Schoff Millis Science Center on the Western Reserve University Campus, Adelbert Road, Cleveland, Ohio. Architects: Small, Smith, Reeb & Draz. General Contractor: The Albert M. Higley Company.

Republic products in the new

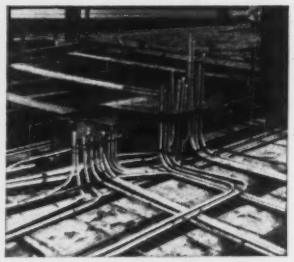
STRONG

More than 17,700 Republic High Strength Structural Bolts went into the five-floor science center, tying friction joints together with sure strength . . . speeding structural erection . . . keeping costs down.

Mr. Richard Nowak of Vogt-Conant Co., steel erectors, reports on a Republic High Strength Bolt advantage that was especially important on this job:

"We were putting up steel within 20 feet of existing university buildings where classes were in session. This created a greater than normal noise problem which we solved by using high strength bolts rather than rivets. We've had good success with Republic High Strength Bolts . . . no trouble on this job, or any of the others where we used them."

ECONOMICAL



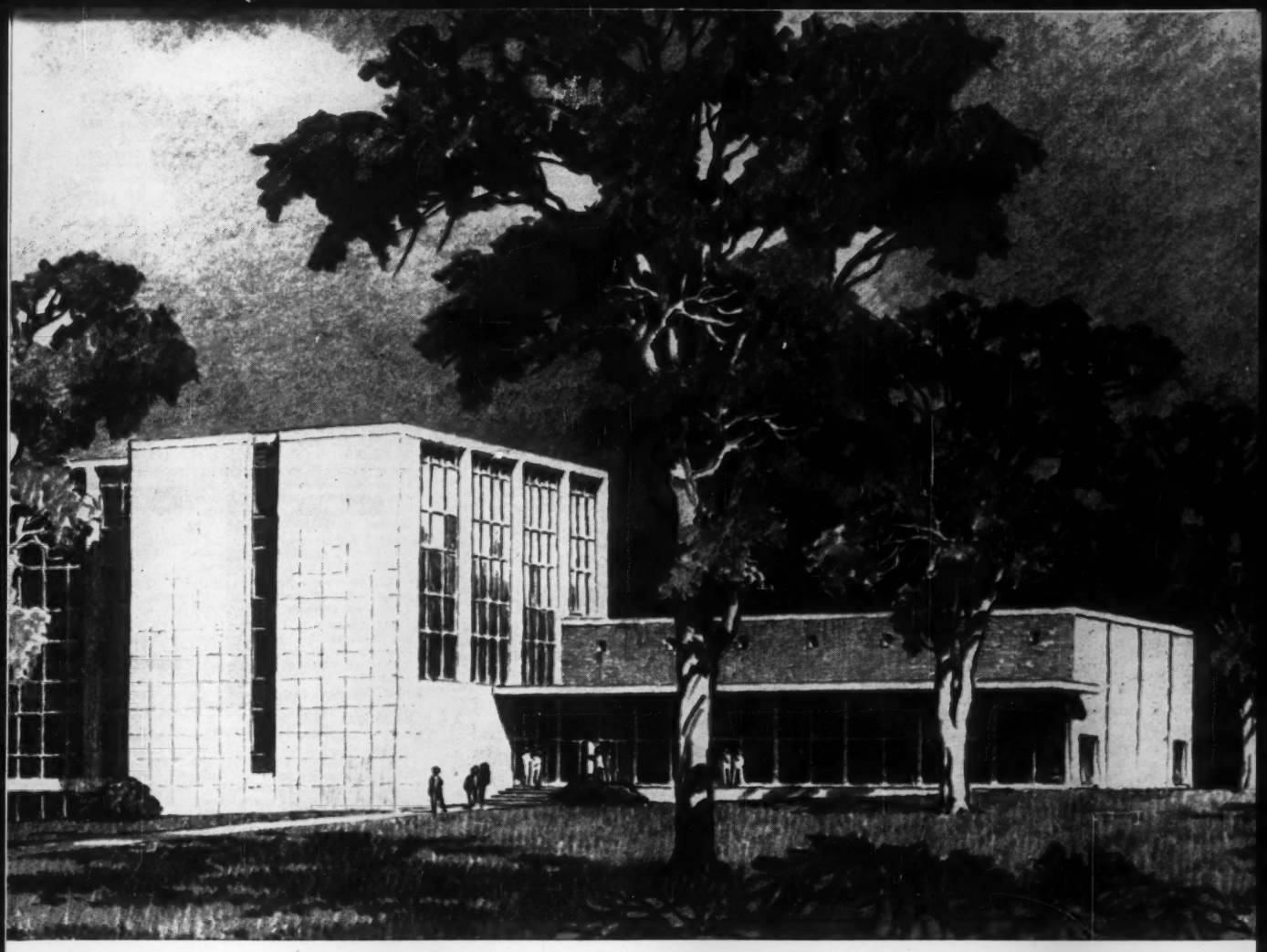
The Western Reserve installation proved again why Republic ELECTRUNITE E.M.T. is the conduit contractors talk about when they say—The *Best* Costs *Less* Installed.

Over 95,000 feet of Republic E.M.T. went into the job. Easy installation features of ELECTRUNITE include: "INCH-MARKED"® for fast measuring, "GUIDE-LINED"® to keep bends in the right plane, and "INSIDE-KNURLING" with "SILVERSLICK" that makes wire pulling up to 37% easier.

Mr. Joseph Martien, vice president of Martien Electric Co., electrical contractors, says: "We've used Republic E.M.T. for about four years . . . have had fine results on this Reserve job and a variety of others. One thing our men like is the easy wire pulling they get with Republic."

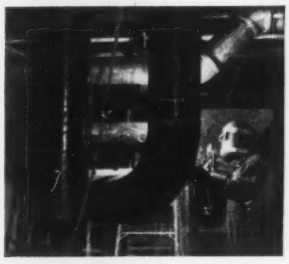
Strong
Modern
Dependable

Steel



Western Reserve Science Center...

LASTING

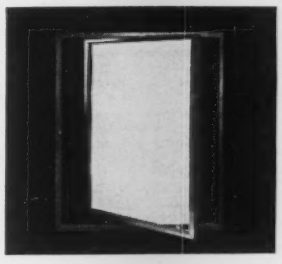


Chemistry, physics, and biology laboratories, among the facilities housed in the new science building, required pipe that could stand up under constant use and severe corrosive conditions.

Republic Steel Pipe was selected for these laboratory waste lines, because of its lasting durability and economy. Republic was also used for vents, and for heating and air conditioning piping.

Mr. Anthony E. Lavelle, president, Gorman-Lavelle Co., plumbing contractors, notes: "Republic Pipe used on this job, consisting of 105 tons of galvanized and black pipe, had uniform, high quality . . . was delivered clean, rust-free and on time."

BEAUTIFUL



Truscon Vertically Pivoted Aluminum Windows add to the center's modern beauty and serviceability . . . offer quality you would expect only in much higher priced windows. They rotate 360 degrees for low-cost cleaning, lock automatically in reverse position for maximum safety, and are double weather-stripped for greatest efficiency in heating and air conditioning.

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(Continued from page 66)

▲ **Ga., Athens**—Bd. Regents University System of Georgia, 244 Washington St. S.W., plans by Cooper, Barrett, Skinner, Woodbury & Cooper, Inc., Henry Grady Bldg., AGRICULTURAL-ATHLETIC COLISEUM at University of Georgia. **$3,000,000.** Chastain & Tindel, 165 Alexander St. N.W., Atlanta, struct. engrs. McLendon & Holbrook, Walton Bldg., Atlanta, mech. engrs. CD 2/18/60.

▲ **Ky., Owensboro**—City Utility Comn., 412 Frederica St., plans by Black & Veatch, 1500 Meadow Lake Parkway, Kansas City, Mo., 2 story ELECTRIC POWER PLANT, steam generator and 125,000 kw turbine generator unit, 2 mi. east of here. **$25,000,000.** CD 3/13/61.

▲† **Md., Bethesda**—General Services Admin., 19 and F Sts. N.W., Wash., D. C., ADMINISTRATION BLDG., National Institutes of Health. **$10,000,000** (no appropriation).

▲ **Md., Rockville**—Montgomery Co. Bd. Educ., plans by Johannes & Murray, 855 Pershing Dr., Silver Spring, Leland JUNIOR HIGH SCHOOL, 44 and Elm Sts., Chevy Chase, **$1,590,000**, plans by Deigert & Yerkes, 3205 N St. N.W., Wash., D. C. Cresthaven ELEMENTARY SCHOOL, Hillandale, **$506,000**.

▲ **Mich., Oak Park**—Bd. Educ., 13900 Granzon Ave., bond election June 12, SCHOOLS. **$3,500,000.** CD 10/8/59

▲ **N. J., Livingston**—Bd. Educ., 189 South Livingston Ave., defeated referendum bonds and project May 11, JUNIOR HIGH SCHOOL. **$2,662,400.** Frederick A. Elsasser, 2013 Morris Ave., Union, archt. CD 4/19/61.

▲ **N. J., West Long Branch**—Bd. Education Shore Regional School Dist., Oceanport, plans by Edwards & Green, 112 S. 16th St., Phila., Pa., REGIONAL HIGH SCHOOL, Rt. 36, Turner Tract, **$2,218,000.** Heim Engineering Associates 17 Linden Place, Red Bank, consult. engrs. CD 3/30/61.

▲ **Pa., Phila.**—Phila Housing Authority, 42nd and 15th Sts., plans by Bellante & Clauss, Suburban Station Bldg., 370 units, Reynolds HOUSING PROJECT, 22nd and Berks Sts. **$3,500,000.** CD 9/12/49.

▲ **Pa., Phila.**—Phila. Housing Authority, 42 S 15th St., 100 units HOUSING, Tulpehocken St., Over **$1,000,000**; plans by Harbeson Hough Livingston & Larson, 117 S. 10th St., Phila., 381 units, West Park HOUSING PROJ., 44th and Market Sts., Over **$3,500,000**, Sauter & Castor, 1505 Race St., consult. engrs. CD 9/12/49.

▲ **Pa., Tamaqua**—Tamaqua School Bd., SECONDARY SCHOOL, Proj. 1008. **$2,097,000.**

▲ **Tenn., Cleveland**—Bradley County, Courthouse, plans by Selmon T. Franklin, 142 N. Market St., Chattanooga, COURTHOUSE ADDN., ALTERATIONS, **$1,500,000.** CD 3/1/60.

▲ **Utah, Salt Lake City**—Salt Lake City and Salt Lake County Corps, City and County Bldg., Zone 1, $5,500,000 Salt Lake County bond election June 20, CITY-COUNTY PUBLIC SAFETY BLDG. **$7,700,000.** CD 10/6/60.

▲ **Man., Winnipeg**—Dpt. Educ., Legislative Bldg., plans by Moody, Moore & Partners, 295 Broadway Ave., MANITOBA INSTITUTE OF TECHNOLOGY, adjoining Brooklands Cemetery. **$3,500,000.**

▲ **N. S., Dartmouth**—Central Mortgage & Housing Corp., (Govt. Corp.), 1032 Gottingen St., Halifax, 400-unit HOUSING development for Navy, Shannon Park. **$3,500,000.**

▲ **Que., Beauceville**—Provincial Dpt. P. Wks. and Provincial Dpt. Health, Parliament Bldgs., Quebec City, HOSPITAL. **$2,000,000.**

COMMERCIAL BUILDINGS

▲ **Ala., Birmingham**—Holiday Inns of America, 3726 Lamar St., Memphis, Tenn., plans by William Bond, 3728 Lamar St., Memphis, Tenn., 150 unit Holiday INN No. 3, swimming pool. **$1,500,000.**

▲ **Calif., Berkeley**—Strawberry Creek Lodge Foundation, c/o Norris M. Gaddis, archt., 632 Grand Ave., Oakland, Calif., 3-4 story, 151 unit Senior Citizens APARTMENT, Addison St. between West and Acton Sts. **$1,383,760.**

▲ **Calif., Concord**—Hill & Rhodes, 918 Harrison St., San Francisco, 153,000 sq. ft. SHOPPING CENTER 1900-car parking, South of Monument Blvd. near here. **$3,500,000.** Constr. August 1961.

▲ **Calif., Los Angeles**—Security First National Bank, 561 S. Spring St., plans by Albert C. Martin & Assocs., 333 S. Beaudry St., 6 story, 90,000 sq. ft. precast concrete, glass BANK BLDG. with bsmnt., street level and mezzanine parking space, 401 S. Main St. **$1,500,000.**

▲ **Calif., Walnut Creek**—Russell J. Bruzzone, 899 Hope Lane, Lafayette, SHOPPING CENTER, 400 car parking, Mount Diablo Blvd. between Moraga Rd. and First St. **$1,500,000.**

▲ **Conn., Bridgeport**—University of Bridgeport, 219 Park Ave., plans by Charles W. Walker, 114 State St., two 4 story, rein.-con. frame, brick DORMITORIES ADDN., steel structural frame FOOD SERVICE ADDN., **$1,900,000.** Paul D. Harrigan, 909 Whalley Ave., New Haven, consult. engr. John W. Shallenberger, 177 State St., elect. engr. John H. Cassidy, 3142 Fairfield Ave., struct. engr.

▲ **D. C., Wash.**—Webb & Knapp National Corp., 1012 14th St. N. W., plans by I. M. Pei & Assoc., 385 Madison Ave., New York, N. Y., L'Enfant PLAZA COMPLEX, between 6½ St. and 11th St. S.W., incl. World Communications Center, 12 story office, 10th and 11th Sts., S.W., west of 10th St., Mall and twin offices, 8 or 9 stories each on north side of Plaza, **$24,000,000**; 1,000 room hotel on easte side extending over 9th St., **$20,000,000.** CD 10/22/59.

▲ **Fla., Hollywood**—Hollywood, Inc., 1943 Hollywood Blvd., plans by Weed-Johnson Assocs., 550 Brickell Ave., Miami, and Anson & Kerr, assocs. archts., 18 NE 4th St., Fort Lauderdale, 300,000 sq. ft. SHOPPING CENTER, Hollywood Blvd. and Park Rd. **$3,000,000.**

▲ **Fla., Kendall**—Joseph Meyerhoff Corp., 1300 1st National Bank, Baltimore, Md., plans by Weed-Johnson Assocs., 550 Brickell Ave., Miami, 1 and 2 story, 200,000 sq. ft. CB-S air conditioning Dadeland SHOPPING CENTER, 400 car parking area, West of S. Dixie Hy. at N. Kendall Dr. **$10,000,000.** R. L. Duffer & Assocs., 3356 Virginia St., Miami, mech. engrs. H. J. Ross & Assocs., 1735 Biscayne Blvd., Miami, struct. engrs., Weeks Engineering Co., 1735 SW 3rd Ave., Miami, elect. engr. CD 11/23/60.

▲ **Ga., Atlanta**—North Georgia Methodist Conference, 3057 Rockingham Dr., N. W., plans by Cooper Barrett, Skinner, Woodbury & Cooper, Henry Grady Bldg., Wesley Woods HOME for AGED, **$4,000,000.** Chastain & Tindel, 165 Alexander St., N. W., struct. engrs.

▲ **Ill., Chicago**—Metropolitan Structures, Inc., 135 South La Salle St., Zone 3, 27 story APARTMENT, incl. swimming pool, underground parking, 2400-16 North Lake View Ave. **$7,000,000.**

▲ **Ind., Fort Wayne**—Indiana University Foundation, (Indiana University, Bloomington; and Purdue University, Lafayette), plans by A. M. Strauss & Assoc., Strauss Bldg., ADMINISTRATION BLDG., two CLASSROOM BLDGS., STUDENT ACTIVITIES BLDG., EXTENSION CENTER, U. S. 30 and S. R. 27. **$3,500,000-$4,500,000.** Bids in Fall.

▲ **Iowa, Dubuque**—Sisters of Charity of the Blessed Virgin Mary, Dubuque, ADMINISTRATION BLDG. **$1,500,000.**

▲ **Md., Laurel**—Laurel Plaza Inc., 1722 L St. N. W., Wash., D. C., plans by John H. Bennett, 9202 Sumit Rd., Silver Spring, SHOPPING CENTER, Ft. Meade Rd. and Rte. 197. **$2,000,000.**

▲ **Mass., Wellesley**—Owner, c/o Salsberg & LeBlanc, archts., 318 Harvard St., Brookline, 1st bldg. 3 story OFFICE PARK DEVELOPMENT, Rtes. 9 & 128, **$400,000.** Total est. approx. $1,000,000. Bids July 1961.

▲ **Mich., Detroit**—C. Allen Harlan & Assocs., 6500 J. Lodge Expressway, plans by King & Lewis, Inc., 15790 Wyoming, Zone 38, 14 story HOTEL ADDN., 300-car parking, Lodge Expressway and W. Grand Blvd. **$2,000,000.** Constr. to start within ninety days.

▲ **Mo., Kansas City**—College of St. Teresa, 5600 Main, plans by Kivett & Myers & McCallum, 1016 Baltimore, Kansas City, Mo., COLLEGE, incl. ADMINISTRATION BLDG., CLASSROOM, Sisters' FACULTY RESIDENCE, DORMITORY, CHAPEL, AUDITORIUM and LIBRARY. **$2,000,000.** Bids January 1962.

▲ **N. Y., Buffalo**—BCH Constr. Co., 860 Walden Ave., Buffalo, plans by Backus, Crane & Love, 232 Delaware Ave., 10 story 80-unit APARTMENT, 1217 Delaware Ave. **$2,250,000.**

▲ **N. Y., New York**—Alpar Realty Assocs., 247-38 Jericho Turnpike, Bellrose, plans by H. I. Feldman, 415 Lexington Ave., Zone 17, multi-story APARTMENT and GARAGE, 221-35 E. 36 St. **$2,642,000.**

▲ **N. Y., New York**—Central Fourteenth Corp., 60 E. 42 St., Zone 17, plans by H. Ginsbern & Assocs., 205 E. 42 St., Zone 17, 17 story OFFICE and GARAGE, 4 Ave. between 13 and 14 Sts. **$2,750,000.**

▲ **N. Y., New York**—Country Squire Motor Inns, 300 Park Ave., Zone 22, plans by Kahn & Jacobs, 2 Park Ave., Zone 16, 21 story Country Squire MOTOR INN, entire block W.51 to W.52 Sts., Broadway and Seventh Ave. **$14,000,000.** Bids Fall 1961.

▲ **N. Y., New York**—Philip Feld & Sidney Feldman, c/o Paul & Jarmul, archts., 59 E.54 St., Zone 22, 12 story, 22,862 sq. ft., 171 unit Bay Park Towers APARTMENTS, northwest corner Bruckner Expressway and Middletown Rd. **$3,500,000.** Abrahams Hertzberg & Cantor, 207 E.37 St., Zone 16, struct, engrs.

▲ **N. Y., New York**—40 Wall St., Co. (Div. Transatlantic Real Estate Co.), 40 Wall St., Zone 5, plans by Carson, Lundin & Shaw, 425 Park Ave. Zone 22, BANK and OFFICES ALTERATIONS, 34-42 Wall St. **$2,500,000.**

▲ **N. Y., New York**—Sarah Korein, et al, 12 E. 86 St., Zone 28, plans by Robert L. Bien, 342 Madison Ave., Zone 17, 17 story APARTMENT, 201-11 W. 57 St. **$2,750,000.**

▲ **N. Y., New York**—1960 Realty Corp., 630 Third Ave., Zone 17, plans by Leo Stillman, 332 E. 149 St., Zone 51, 12 story penthouse APARTMENT and GARAGE, 207-21 E. 74 St. **$2,200,000.**

▲ **N. Y., New York**—The Princeton Club of New York, 39 E.39 St., Zone 16, plans by Voorhees, Walker, Smith, Smith & Haines, 101 Park Ave., Zone 17, multi-story APARTMENT, 15-21 W.43 St. **$1,800,000.**

▲ **N. Y., New York**—Morris Sosnow, 30 Shore Dr., Great Neck, plans by Paul & Jarmul, 59 E. 54 St., Zone 22, 21 story Gramercy Spire APARTMENT, E. 16 St. and Third Ave. **$3,500,000.**

▲ **N. Y., New York**—Morris Sosnow, 30 Shore Dr., Great Neck, plans by Paul & Jarmul, 59 E. 54 St., Zone 22, multi-story APARTMENT and GARAGE, 200-8 E. 19 St. **$2,800,000.**

▲ **O., Columbus**—United Redevelopment Corp., 42 E. Gay St., Zone 15, (John W. Galbreath & Co. & Nationwide Development Co.) plans by Rich. L. Tully & Frederick H. Hobbs, Jr., 582 Oak St., 955 unit APARTMENT, COMMERCIAL AND INDUSTRIAL DEVELOPMENT, SHOPPING CENTER, 2 ELEMENTARY SCHOOLS, park, skating rink, 3 swimming pools, **$25,000,000.** Gordon McGaw, 582 Oak St., consult. engrs. Bids June 1961.

▲ **Pa., Phila.**—Nazareth Hospital, Roosevelt Blvd. and Holmes Ave., plans by Henry D. Dagit & Son, 1329 Race St., HOSPITAL EXPANSION, **$4,300,000.** McCormick-Taylor Assocs., Suburban Station Bldg., consult. engrs. CD 2/23/56.

▲ **Pa., Pittsburgh**—Pittsburgh Hospital, East End, 50 bed HOSPITAL ADDN., East End, Washington Blvd. and Frankstown Ave. **$2,000,000.**

▲ **Tex., Austin**—General Commercial Development Corp., c/o Dick Jordan, Bldg. Permit Dpt., City Hall, 500 unit APARTMENT-HOTEL, 7½ acre tract, North Loop Blvd. and Hancock Drive, **$3,000,000.** Bids Mid-Summer 1961.

▲ **Tex., Dallas**—J. Curtis Sanford, 1712 Cedar Springs Road, plans by Roper & Vance, 4411 N. Central Expressway, 3 story and 25 story Tower Sanford Center APARTMENT and OFFICE, Camp, Ross and Akard Sts. **$11,500,000.** Bids between mid. and last of 1961. CD 2/5/58.

▲ **Va., Richmond**—Olin A. Rodgers, repr. Baltimore Owners, Travelers Bldg., 149 units, 15 story APARTMENTS, 12 acre site, Locke Lane, **$3,500,000-$4,000,000.**

▲ **Va., Richmond**—Westover Hills Apartments, c/o Morton G. Thalhimer, Inc., 1013 E. Main, 19 brick, 418, garden-type APARTMENTS, east and west side Westover Hills Blvd., between ACL RR and Chesterfield County. **$3,000,000.**

▲ **Wash., Seattle**—Sea Crest Corp., c/o L. Prescott, Central Bldg., MARINA, RESTAURANT, APARTMENT. **$4,000,000.** Constr. this summer.

▲ **Man., Winnipeg**—Owner, c/o Waisman, Ross Assocs., archts., 208 Edmonton St., SHOPPING CENTRE, Grant Park Shopping Plaza. **$3,000,000.**

▲ **Ont., London**—St. Joseph's Hospital Bd., Richmond and Grosvenor Sts. plans by Watt & Tillman, 656 Richmond St., 6 story, steel HOSPITAL ADDN., incl. parking in basement for doctors. **$5,000,000.** CD 1/13/61.

▲ **Ont., Toronto**—Bell Telephone Co. of Canada, 393 University Ave., 15 story OFFICE, Adelaide St. W., **$7,000,000.** Bids in 1962.

▲ **Que., Montreal**—The Forty-Three Hundred 4300 Western Ave., Westmount, plans by Reuben Fisher, 3177 St. Sulpice Rd., EAST WING EXTENSION of 11 story, modern cruciform, concrete, brick, rein.-con., air-conditioned APARTMENT, **$5,000,000.** Total est. $10,000,000. Morris Levis, 1410 Guy St., Montreal, consult. engr. CD 1/26/61.

INDUSTRIAL BUILDINGS

▲ **Ala., Montgomery**—Industrial Development Bd. of Montgomery, c/o Chamber of Commerce, plans by Henschien Everds & Crombie, 59 E. Van Buren St., Chicago, Ill., 100,000 sq. ft. brick MEAT PACKING PLANT. **$2,000,000.** Frosty Morn subsidiary Tennessee Packers, Inc., lessee.

▲ **Florida**—East Central Nuclear Group, Inc., and Florida West Coast Nuclear Group, c/o General Nuclear Engineering Corp., sub Combustion Engineering Co., Dunedin, will not construct 50,000 kw GAS COOLED REACTOR NUCLEAR POWER PLANT, **$26,000,000,** Project abandoned. CD 3/4/59.

▲ **Neb., Omaha**—Hinky Dinky Stores, 711 South Eleventh St., 260,000 sq. ft. DISTRIBUTION CENTER, 132nd St. and Union Pacific Main Line, grocery warehouse, frozen storage, meat department, general warehouse and general office. **$1,500,000.** To be built this autumn. Bids mid-summer.

▲ **O., Massillon**—Republic Steel Corp., Republic Bldg., Cleveland, Zone 15, 56 in. BRIGHT ANNEALING LINE for STAINLESS STEEL SHEET at Massillon Plant. **$2,000,000.** CD 8/16/56.

▲ **Okla., Guymon**—Republic Natural Gas Co., Guymon, refrigerated NATURAL GAS EXTRACTION PLANT, **$2,000,000.**

▲ **Okla., Tulsa**—Safeway Stores, Inc., 310 N. Detroit St., Tulsa, 310 x 352 ft. GROCERY WAREHOUSE, 90 x 125 ft. FROZEN FOODS WAREHOUSE and 210 x 235 ft. PERISHABLE FOOD WAREHOUSE, **$3,000,000.** Bids in June.

▲ **Okla., Tulsa**—Sinclair Oil & Gas Co., 909 S. Boston St., concrete, steel A/C RESEARCH LABORATORY. **$4,000,000.**

▲ **Tex., Freeport**—Nalco Chemical Co., 6221 W. 66 Place Summit, Chicago, Ill., tetraethyl and tetramethyl mfg. PLANT, **$9,000,000.**

▲ **Que., Joliette**—Gypsum, Lime & Alabastine Ltd., Sun Life Bldg., Montreal, ROTARY LIME KILN, STONE CRUSHING and SCREENING PLANT ADDN. Chemin St. Paul. **$2,000,000.**

PUERTO RICO

▲ **Puerto Rico, San Juan**—Monte Carlo Hotel Corp., c/o Cesar Calderon, Payco Mfg. Co., San Juan, plans by William Tabler & Assocs., 401 Seventh Ave., New York, N. Y., U.S.A., 200-room luxury HOTEL, 4 acre site. **$6,000,000.**

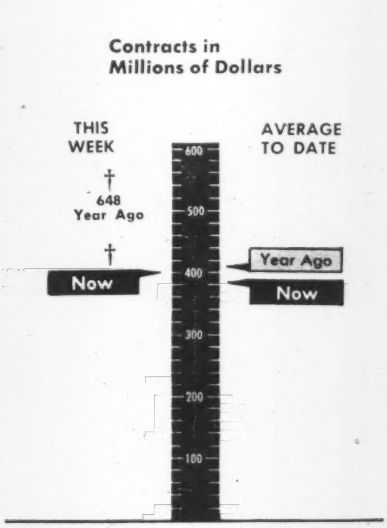
AMERICANS ABROAD

▲ **Jordan, Jerusalem**—Intercontinental Hotels Corp., 135 E. 42 St., New York 17, N. Y., U.S.A., plans by William B. Tabler, 401 Seventh Ave., New York 1, N. Y., U.S.A., 200-room HOTEL, Mount of Olives. **$5,000,000.**

(Proposal Advertisements see pp. 78 to 82)

Construction Scoreboard

This Week . . .



AMOUNT OF CONTRACTS LET

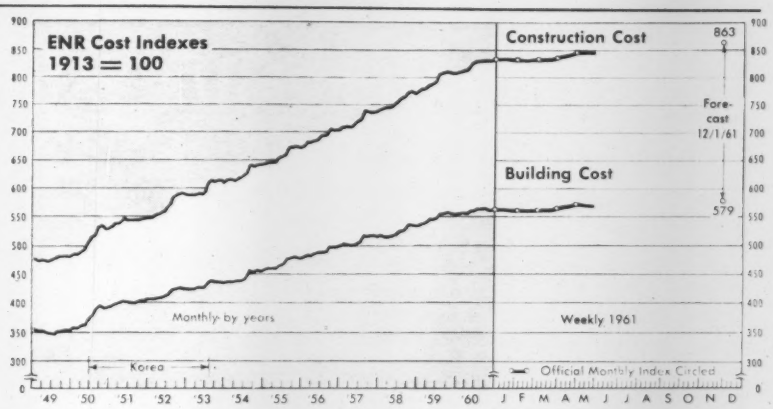
Contracts Awarded In 50 States By Type	This † Week	Cum. 22 wks 1961	Chge '60-'61 %
	millions		
All Heavy Construction	$399.9	$8,938.2	− 2
By Ownership			
PRIVATE	225.4	4,590.8	− 8
PUBLIC	174.5	4,347.4	+ 6
State & Municipal	138.0	3,343.8	+ 6
Federal	36.5	1,003.6	+ 6
By Type of Work			
PUBLIC			
Waterworks	6.7	156.4	−17
Sewerage	13.0	300.0	+31
Bridges*	8.7	234.3	−35
Highways	59.7	1,474.7	+12
Earthwork, Dams & Waterways	15.3	353.1	+11
Buildings:			
Excl. Housing	44.2	1,024.7	+ 6
Housing	16.7	317.7	+54
Unclassified	10.2	486.5	−10
PRIVATE			
Buildings:			
Mass Housing	105.3	2,028.4	−23
Commercial	45.1	1,019.4	+12
Industrial	68.7	1,345.4	+28
Unclassified	6.3	197.6	−51

*Includes Private bridges †4-day week

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of May 25	Cum. 21 wks 1961	Chge '60-'61 %
	millions		
Corporate Securities	$207.1	$1,498.1	+36
State and Municipal:			
All Except Housing	165.4	2,603.5	− 3
Housing	1.6	31.3	+130
Federal Loans	15.6	94.7	+43
Federal Aid	0	0	−100
Total Nonfederal	$389.7	$4,227.5	−36
Federal Appropriations:			
Projects in U. S.	0	1.0	−99
Outside U. S.	0	0	−100
Total New Capital	$389.7	$4,228.5	−37


ENR Cost Indexes
1913 = 100
Construction Cost
863
Fore-cast 12/1/61
Building Cost
579
Monthly by years
Weekly 1961
Korea
Official Monthly Index Circled
49 50 51 52 53 54 55 56 57 58 59 60 J F M A M J J A S O N D

ENR INDEXES (1913=100), 20-cities' average	Week of May 25 1961	% Change from Apr. 27 1961	May 26 1960
Construction Cost	848.42	+0.1	+3.2
Building Cost	569.12	+0.02	+1.9

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

Latest Month . . .

STATE AND MUNICIPAL BOND SALES

	1961 May	1961 5-Mos.	Percent Change from 1960 May	Percent Change from 1960 5-Mos
	(millions)			
Total Bond Sales	$562.7	$2,634.8	+13	− 3
BUILDINGS	310.8	1,423.2	+17	+ 3
Schools	228.3	1,131.8	+27	+14
Housing	5.2	31.3	0	+130
Other buildings	77.3	260.1	−10	−29
HEAVY CONSTRUCTION	251.9	1,211.6	+ 9	− 8
Waterworks	60.7	220.0	+53	+39
Sewerage	23.1	153.2	−35	−13
Bridges	0.6	30.4	−69	−72
Highways	50.7	230.3	+69	+20
Earthwork, dams, waterways	16.6	170.9	−49	−0.2
Electric and gas utilities	12.4	34.5	−66	−74
Airports	51.6	81.9	+1112	+42
Parking facilities	1.5	14.2	−55	− 9
Unclassified	34.7	276.2	−32	−12

CONSTRUCTION MACHINERY PRICE INDEXES

Manufacturers Prices, 1947–49 = 100—BLS	Apr. 1961	Percent Change from last Month	Year
All Types	178.2	+0.1	+2.0
Cranes, Draglines, Shovels	173.9	+0.3	+0.8
Shovel, ¾ cu. yd	178.2	+0.3	+1.4
Shovel, 1–1½ cu. yd	191.0	+0.9	+1.3
Shovel, 2–2½ cu. yd	169.1	0	+1.6
Crane, truck mounted	165.9	0	−1.4
Scrapers and Graders	166.6	0	+0.8
Scraper, 4 Wheel, 12–15 cu yd	156.8	0	0
Grader, heavy duty	174.1	0	+0.6
Tractors (non-farm; incl. industrial)	195.7	0	+2.4
Wheel-type, off-highway (January 1955 = 100)	129.2	0	0
Crawler type, 100–154 dhp	200.2	0	+3.1
Machinery, Tractor Mounted	177.3	0	+4.8
Dozer, hydraulic control	201.4	0	+7.9
Loader, shovel type	166.5	0	+2.4
Specialized Machinery	158.8	0	+0.6
Ditcher	153.8	0	+2.3
Roller, tandem	228.5	0	+0.9
Roller, 3 wheels	178.7	0	0
Portable Air Compressors	182.6	0	+0.0
Contractors Air Tools	190.6	0	+1.9
Mixers, Pavers, Spreaders	159.9	−0.7	+0.1
Mixer, truck, 6 cu yd	131.1	−2.5	−3.0
Mixer, paving, 34 cu ft	192.9	0	−1.9
Bituminous paver	165.9	0	+0.2

Big Housing Bill Looks Certain

Democrats have the votes—and they may use them to push through a broader bill than Kennedy asked for

President Kennedy's huge omnibus housing bill looks like a safe bet. In the preliminary skirmishes, Democrats in Congress have demonstrated that they've got the votes to deliver every program the President wanted.

If anything, Congress will eventually deliver a somewhat bigger housing bill than Mr. Kennedy asked for.

Here's a rundown on the major provisions of the bill, which the Senate is set to take up this week.

• **Urban renewal**—The Senate Banking Committee has approved the $2.5-billion increase in authorizations, bringing the total up to $4.5 billion. It also earmarked $50 million of this for mass transportation demonstration projects.

• **FHA insurance for low-income families**—The committee approved a two-year experimental insurance program to build houses up to $15,000 with 40-year mortgages. The maximum interest rate would be 5% (6% "if the Commissioner finds it necessary to meet the market.")

• **Rehabilitation loans**—The committee adopted a new program of insured loans for rehabilitating existing houses, both in and out of urban renewal areas. The maximum loan would be $10,000 for 25 years at a top interest rate of 6%. The committee also adopted the Administration's recommendation that Fannie Mae special assistance funds be made available to purchase the debt paper, as a way of getting the new program off the ground. It is expected that most of these loans will at first go for houses in already designated urban renewal areas.

• **Experimental housing mortgage insurance**—The committee adopted a limited program of FHA insurance on experimental housing to try out new materials and techniques "which could substantially change design and construction techniques for residential structures." Among the ideas described by housing officials: a stressed-skin sandwich panel with a polystyrene core; nylon tubing for plumbing facilities; particle boards with superimposed veneer finishes for floors, walls, and cabinet coverings; plastic woven wall coverings. The committee suggested that mortgages insured should not result in estimated claims exceeding $1 million.

• **Housing for the elderly**—The committee increased the authorization for direct loans to $100 million—up from the present $50 million—in accordance with Administration recommendations. The loans are available to public agencies, and non-profit organizations.

• **Public housing**—The committee approved authority for the Public Housing Administration to contract for construction of the 100,000 units remaining from the totals authorized by the 1949 law; no time limit is fixed for this.

• **College housing**—The committee approved loans for college housing of $100 million for fiscal year 1961, which ends June 30, and $250 million a year for the next five years.

• **Community facilities**—The committee not only approved the President's request to add $50 million to the existing community facilities program, but it inserted $100 million for loans to mass transportation systems. These would go to state or local public bodies for the acquisition, construction, reconstruction, and improvement of facilities.

• **Fannie Mae**—The Federal National Mortgage Association, which buys insured mortgages on special programs as directed by the President, would have an additional $750 million made available for such purposes.

• **Home improvement loans**—The committee approved a two-year extension of the FHA Title I program, as the Administration suggested.

• **General insurance authorization**—The committee removed the dollar limitation on FHA's insurance authority. Instead, the committee authorized FHA insurance programs until Oct. 1, 1965, with no dollar limit.

• **Open space**—The committee authorized appropriations of $100 million to pay up to 25% of the cost of acquiring permanent "open space land" in or adjoining an urban area.

Toward the end of last week, some House Democrats were trying to inject a public works program into the bill—something the President had pointedly not requested. This would be done by adding $500 million to the community facilities loan program.

Democrats were also trying to extend FHA insurance to mortgages covering whatever investment in improvements developers must make to convert raw land into sites suitable for moderate-priced homes. Other proposed amendments would lower down-payments on single-family housing, boost the insurance maximum to $27,500, and extend mortgages to 40 years from the present 30 years.

Builder Features Bomb Shelters

A California homebuilder is constructing nuclear fallout shelters as an integral part of two large housing developments in Conjo Valley, some 45 miles from Los Angeles.

Several developers across the nation have offered shelters as an optional extra, but Exhibit Homes, Inc. of Beverly Hills is the first to make shelters a built-in feature of its houses. Shelter cost of $1,100 is included in the price of the homes, which range from $17,750 to $33,950.

Built completely underground, each shelter will have a 2-ft-thick concrete roof that also serves as the garage floor above. Solid concrete-block walls enclose the 8-ft-square area. The access door is built flush with the garage floor, opening to a ship's ladder descending into the vault.

Designed for occupancy by a family of six, each shelter has provisions for electrical wiring, radio antenna, and piping for emergency water supply. Air is pumped into the underground chamber through a filtered intake. A hand-operated centrifugal blower, for use during power failures accompanying an atomic attack, will force air through the system.

Architect Raymond D. Conwell of Los Angeles, designer of the 850-home project, generally followed recommended plans of the Office of Civil and Defense Mobilization.

Business in Brief...

• **A-E firm expands**—Charles Luckman Associates, Los Angeles architect-engineers, acquired full interest in Richard George Wheeler & Associates, architect-engineers of San Diego. Mr. Luckman says the San Diego organization will remain completely intact, continuing to operate under its own name as a division of Charles Luckman Associates.

• **Money for schools**—Florida will take bids June 13 on $6 million worth of school construction bonds.

• **Highway dollars**—Florida's legislature is expected to approve a highway budget totaling $387.4 million by the end of June. Funds would be spent in the fiscal year starting July 1.

• **Joint-investment**—Construction of a 30-story building in Denver will start next February. Security Life & Accident Co. of Denver and Liberty National Bank and Mid-America Building Corp. both of Oklahoma City are backing the project. Sorey, Hill & Sorey of Oklahoma are the architects for the 450,000 sq ft building.

• **Ouch!**—Public officials in Hawaii who violate statutes requiring competitive bidding on public works jobs of more than $4,000 will now be subject to one year in prison, a $1,000 fine or both. The measure cleared the legislature after hearings turned up many violations that could not be punished because there was no statutory penalty.

Credit men tell contractors . . .

Join Forces to Cut Retainage

Credit managers think the construction industry should work harder at liberalizing retainage rates in construction contracts. Right now, an estimated $5 billion is tied up in retained percentages, according to the National Association of Credit Management.

Glenn F. Ballard, chairman of the organization's committee on improved construction practices, reports that most construction contracts still provide for withholding percentages of up to 20% of a contract's price pending completion of the project. Construction should aim for a retainage rate in line with that contained in federal contracts—10% until a job is 50% complete and no additional retainage after that, provided work is satisfactory to the owner or his architect.

Extending this principle to private work in general would greatly increase the profit position of the industry. In many cases the amount of retainage on a job represents more than the contractor's ultimate profit. "It would be a major advance if 50% of that estimated $5 billion in retained percentages could be released," Mr. Ballard told the association's annual meeting in Denver.

He reported that the American Institute of Architects General Convention and some of the organization's chapters endorse the policy.

Members of the Credit Association also heard a recommendation that they keep a closer watch on contractors who owe money for building materials.

Everett C. Spelman, vice president of Western Securities Co., a Denver-based mortgage banking company, said suppliers should work closely with the company financing a job. "While it is sometimes difficult to get desired information from the general contractor or owner, you should have no trouble getting it from the lender."

He said when a large construction project is involved, a supplier should "visit the lender at the time you receive the contractor's order or at the start of the job. Also send a letter stating that you are supplying certain materials to the project, and that from time-to-time you may want to obtain the latest information relative to the condition of the loan."

Materials suppliers were criticized for "striving mightily for a contractor's order," then failing to check on the customer for fear of offending him. Said Mr. Spelman: "More money has been lost by failure to follow good business practices and take advantage of lien laws. . . . No supplier should hesitate to avail himself of the protection provided by statutes. No lender will criticize a supplier for filing a lien to protect his interests."

Why Not Renewal?

Critic hits "small town thinking" by C of C

Two staunch opponents of federal spending for urban renewal came under counterattack last week.

• The Chamber of Commerce of the United States, which had condemned the federal urban renewal program at its annual convention, was itself condemned for "little village thinking" by its Philadelphia chapter.

• And the city of Dallas, which has turned its back on federal renewal money, was described as "sick with slums" by the National Association of Real Estate Boards.

The Philadelphia Chamber of Commerce made its disagreement with the national body plain to the Pennsylvania congressional delegation last week. Robert Coltman, chairman of the Philadelphia's C of C economics and taxation council, informed the congressmen that his chapter backs proposals to increase the amount of urban renewal funds allocated to industrial renewal. (Under this proposal a community could spend up to 30% of its renewal grants for industrial sites. Currently, only 20% can be used for this purpose.)

Mr. Coltman said that expenditure of up to 50% should be allowed.

In Dallas, the Build America Better Committee of the National Association of Real Estate Boards issued a written report on the city. The report noted that Dallas generally boasts high environmental standards and creative patterns of land use. But, it went on, housing conditions in certain areas "are among the most grievous we have seen." According to the 1960 housing census, 13% of Dallas' housing units are deteriorating, the report pointed out.

Because the city's self-financed renewal program is "too little and too slow," the association offered the following recommendations:

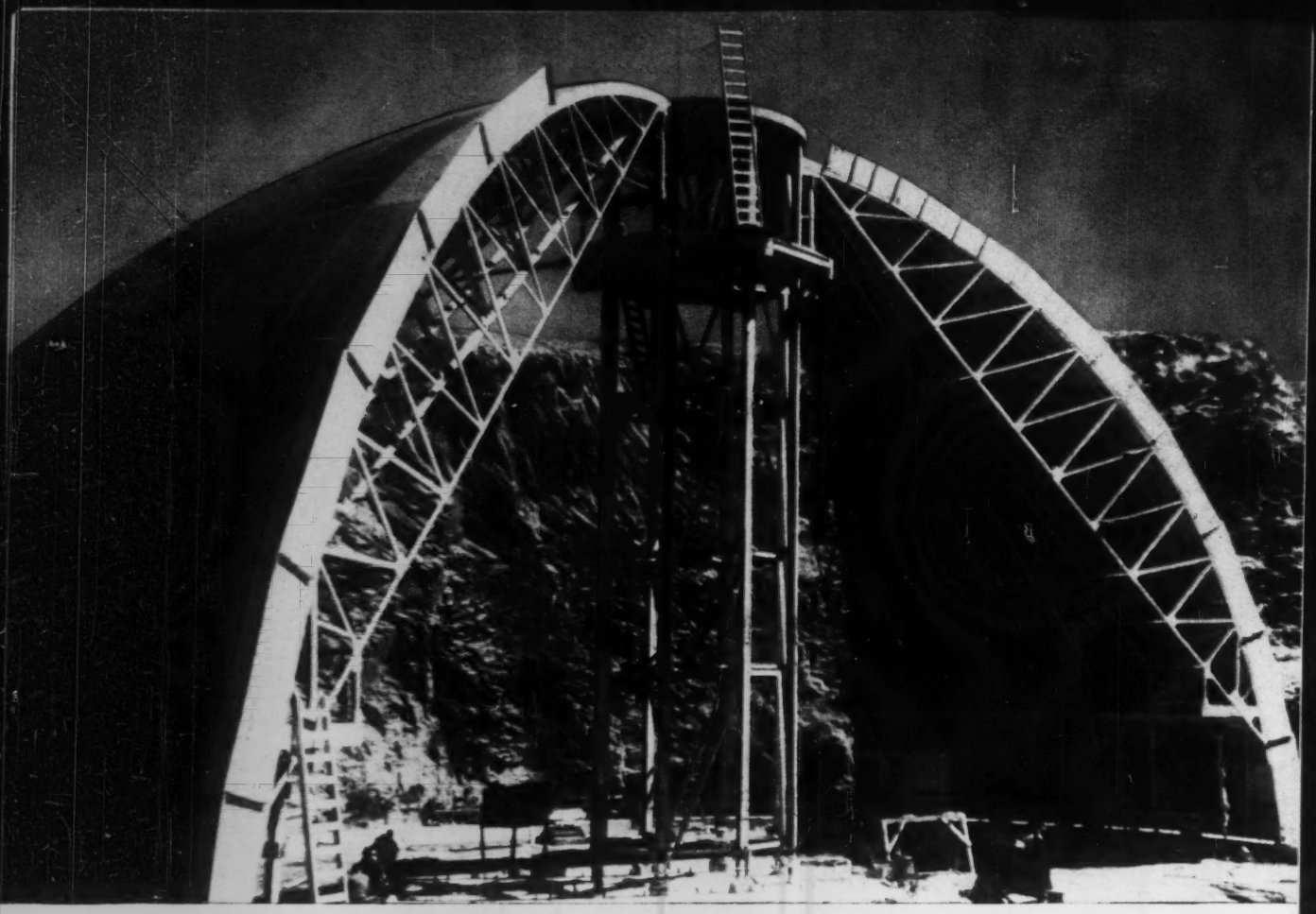
• Call a referendum on a proposition that would give the city power to exercise the right of eminent domain under the Texas urban renewal enabling legislation.

• Take advantage of federal aid for urban renewal.

• Adopt a long-range public works program that would provide for orderly growth in new areas and provide facilities for blighted neighborhoods.

• Establish a court devoted to the enforcement of anti-blight laws.

• Expand the city's minimum property standards to cover commercial structures as well as residential units.



Blaw-Knox steel forms speed Mountain Home Air Force Base Titan missile job

ONLY FOUR POURS NEEDED FOR 125′ DIAMETER CONCRETE DOME

Two opposing steel forms, each a 45° segment, were moved just three times to complete the pouring of concrete for the hemispherical dome for the power house on this new complex being constructed at the Mountain Home Air Force Base, Mountain Home, Idaho. Kaiser-Raymond-Macco-Puget Sound joint venture has the prime contract for this U.S. Army District project, Walla Walla Corps of Engineers, Walla Walla, Washington.

After the 16′ diameter center keystone was poured on top of the umbrella pedestal, the two forms were poured, then lowered by screw jacks and rotated on rubber wheels to the three other positions needed to complete the dome. Both of the inside and outside forms are designed and constructed to a true spherical surface.

Similar Blaw-Knox forms for a 100′ diameter control center dome were used, as were forms for missile silos and terminal silos on the base. Each of the forms were used for several domes and silos and could well be used on other jobs.

All of the forms were made in sections as large as shipping facilities would permit, in order to minimize on-the-job erection time.

Precise engineering and construction for important projects like this, durability, re-useability, plus ease and simplicity of handling are features of Blaw-Knox steel forms for domes, silos, bridges, tunnels, dams or other heavy construction. Call Blaw-Knox steel forms consultation service early in your planning for important engineering help. Blaw-Knox Company, Pittsburgh 38, Pa.

BLAW-KNOX

Steel Forms

BLAW-KNOX

Blaw-Knox designs and manufactures for America's growth industries: METALS: Rolling Mills • Steel Processing Lines • Rolls • Castings • Open Hearth Specialties • PROCESSING: Process Design, Engineering and Plant Construction Services • Process Equipment and Pressure Piping • CONSTRUCTION: Concrete and Bituminous Paving Machines • Concrete Batching Plants and Forms • Gratings • AEROSPACE: Fixed and Steerable Antennas • Radio Telescopes • Towers and Special Structures • POWER: Power Plant Specialties and Valves

Avoid Trouble; Get a Contractor's Gate

Steelworker picketing of construction gate at a Phelps Dodge plant is banned as an illegal boycott

The AFL-CIO industrial unions have lost another case on construction gate picketing.

In a decision that is a boon to outside contractors, a federal court has ruled that industrial union picketing of a plant gate set aside for the use of outside contractors working in the plant is an unlawful secondary boycott.

The decision was handed down last month by the Second Circuit Court of Appeals. It is based to some extent on the controversial Denver Building Trades case and shows how one labor dispute is often a piece of a much larger jigsaw puzzle.

The trouble occurred at a Phelps Dodge copper ore refinery in Maspeth, N. Y.

A local of the steelworkers union, representing 1,000 production workers in the plant, struck the plant during a normal collective bargaining dispute with Phelps Dodge. It picketed all the plant gates, including one set aside for the exclusive use of contractors who were installing new air pollution control equipment inside the plant.

In the course of the litigation that followed, the National Labor Relations Board ruled that the construction gate picketing was a secondary boycott. The federal court ruling affirmed that decision.

The steelworkers tried to claim that the construction gate picketing was primary and lawful because it took place on the premises of its employer, Phelps Dodge. In rejecting the claim, the court said:

• Under the Denver case, "We must draw the line between protected primary conduct and illegal secondary conduct by balancing the dual, Congressional objectives of preserving the right of labor organizations to bring pressure to bear on offending employers in primary labor disputes, and of shielding unoffending employers and others from pressures in controversies not their own."

• In the Denver case, the Supreme Court "intimated" that "some activity at the primary employer's premises falls within" the boycott ban. The union did not need to include the construction gate in its picketing in order to publicize its dispute with Phelps Dodge. The inclusion of the gate could have had only one objective. And that was to hurt the neutral, outside contractors to the point of forcing them to quit—a pressure tactic designed to tighten the screws on Phelps Dodge.

It is precisely this use of the Denver case that made the industrial unions torpedo the building trades' chances of getting congressional approval of the situs picketing bill this year.

The bill would reverse the Denver case and allow construction unions to picket multi-employer sites even though the work of neutral contractors would be shut down. It would bring no relief to industrial unions in the Phelps Dodge situation. The resulting legislative friction between craft and industrial unions has sharply increased the disunity in the AFL-CIO.

In summing up the law on construction gate picketing at industrial plants, the Second Circuit Court said the NLRB doctrine is clear. Industrial union picketing of a plant entrance used by outside contractors, the court said, is a boycott banned by law under these circumstances: "There must be a separate gate marked and set apart from other gates; the work done by the men who use the gate must be unrelated to the normal operations of the employer, and the work must be of a kind that would not, if done when the plant were engaged in regular operations, necessitate curtailing these operations."

Labor in Brief . . .

• **Compulsory unionism**—The National Right To Work Committee will hold a two-day seminar in Indianapolis October 24-25. The purpose: To help those working at the local level to make the movement against compulsory unionism more effective in all the 50 states.

• **A flaw in training?**—Eight out of 10 carpenters in California are asking for trouble because they are overspecialized. Lopsided skills of this kind contribute to unnecessary unemployment. Those were the comments last month of Charles Hanna, head of the California Division of Apprenticeship.

• **For tighter control**—Disillusioned with the "goldfish bowl" approach of self-policing, President Kennedy has asked Congress to amend the 1958 Welfare and Pension Plans Disclosure Act. He would impose new penalties for violations and give the Labor Department power to investigate and enforce.

• **Prevailing wages**—The Kentucky Prevailing Wage Board cannot import union wage scales into nonunion counties where no labor contracts exist in determining minimum wages to be paid on state jobs. That was the ruling of the Court of Appeals last month in a dispute between the board and Hopkins County.

• **National Disputes Adjustment Plan**—Members of the National Constructors Association and the AFL-CIO international building trades unions held a full-day meeting last week to perfect the operation of their new disputes settlement machinery. They expressed optimism and confidence in the plan's effectiveness.

• **Joint Appeals Board**—The Joint Appeals Board held its first organization meeting last week. Board members, representing the Associated General Contractors and seven international building trades unions, said JAB has already had a salutary effect and good local reception. Next formal meeting is set for September 20.

• **Craft-industrial union disputes**—The AFL-CIO Executive Committee has instructed a special committee headed by federation vice president Al Hayes to make another attempt at drafting an arbitration agreement for settling inter-union jurisdictional disputes. Plan is to submit the new draft to the Executive Council at its quarterly meeting beginning June 26.

• **Union loses election**—Workers employed by MacGregor Triangle Co. on construction of access roads at Cougar Dam reservoir near Blue River, Ore., have rejected a local of the operating engineers as bargaining agent.

AGC-Teamster Agreement Uses JAB

The Associated General Contractors of Illinois and the Illinois Conference of Teamsters have become the first to adopt the construction industry's new Joint Appeals Board procedure.

Their new three-year labor contract sets up local grievance and arbitration procedures and provides for the conditional use of the Joint Appeals Board as an alternative to arbitration.

JAB was created in April by the Associated General Contractors of America and seven international building trades unions, including the teamsters. It is voluntary machinery that was set up for the settlement of labor disputes without strikes, lockouts or litigation (ENR May 18, p. 219).

In making use of the JAB procedure, however, the Illinois groups have rejected the stipulation agreement recommended by the board's founders. And they have narrowed the spectrum of disputes to which the board procedure applies.

Instead of making resort to JAB mandatory, they have given their Local Joint Committee discretion over referral of disputes to the board.

The Illinois procedure provides, as a first step, for the settlement of disputes by the contractor and union concerned. Disputes not settled at that level are referred to a joint committee, representing the association and the conference. If the committee deadlocks, it can send the dispute to JAB or to a special arbitration board provided for in the local agreement. But neither of these channels can be used unless a majority of the joint committee votes to use it.

Unlike the procedural agreement that set up JAB, the Illinois agreement excludes collective bargaining disputes from the grievance machinery and includes jurisdictional disputes. It also excludes disputes relating to the obligations imposed by the contract's seven-day union shop clause. Strikes and lockouts are banned during the processing of disputes that come within the grievance procedure.

The Illinois contract covers construction work in 92 counties.

It provides for a 35-cent wage increase spread over three years—12½ cents now, 12½ cents next April 1 and 10 cents on Apr. 1, 1963.

The contract gives exclusive referral rights to the union but indemnifies contractors against all damages and liabilities that may flow from teamster violation of the hiring provisions.

Other significant contract provisions:

- A ban on "restrictions as to the use of machinery, tools or appliances."
- A subcontractor clause that requires the agreement to be made "a part of the specifications on any work which a contractor shall sublet, in any manner, to another contractor."
- A clause that gives the teamsters the right to "refuse to go through a duly authorized picket line of any union."

Philadelphia Contractors Try PR Plus

Building contractors in Philadelphia, have embarked on a broad and ambitious education program for the benefit of all segments of the building construction industry in the local five-county area. The program is a recruiting, training, personnel development, education, public relations and research effort all rolled into one.

Present plans range from an extensive study of industry training needs, through scholarship awards and promotion of construction-oriented college courses, to university research grants.

The General Building Contractors Association, which is the Philadelphia Builders' Chapter of the Associated General Contractors, is developing the program. It is doing so in its capacity as administrator of what is known in the area as the Industry Advancement Program.

In some ways, development of the education program proves the old adage that "great oaks from little acorns grow." For not long ago, in its labor contracts with the carpenters, cement masons and laborers, the GBCA negotiated the Industry Advancement Program. That program—the first set up by an AGC chapter—is supported by an employer contribution of five cents an hour for each hour worked by members of the three trades. The money collected is used for public relations, industry relations, labor relations (including apprenticeship) and education.

GBCA's new education plan is part of the advancement program. Among the projects planned or under consideration:

- A professionally guided survey to determine the educational and training needs of the industry above the level of apprentice training.
- Scholarship awards to local high school students who want to study civil engineering, and financial grants to the top carpenter apprentice graduate for further education.
- Daytime training programs in building construction technology.
- Engineering refresher courses for employees on the management level.
- Financial assistance to universities able and willing to develop construction-oriented curricula.
- Grants for university research and development work on construction materials and techniques.

John S. McQuade, Jr., first vice president of GBCA, is chairman of the newly established education committee. The education program will be administered by Robert H. Thompson. Mr. Thompson said the program can serve these purposes:

- Give young people about to choose a career a better idea of "what the building business is."
- Encourage more people to enter the industry through the skilled trades.
- Improve the skills and know-how of journeymen and management people alike, and provide greater opportunity for advancement.
- Give civil engineering students a better grasp of construction business problems.
- Improve the public's image of the construction industry.

Wage Rates in Hawaii Move to Higher Levels

Substantial increases in Hawaii construction wages are foreshadowed by a new labor contract that will push hourly rates for plumbers up to $4.00 on Aug. 1, 1962.

A 20-cent raise, effective last month, will be followed by 15 cents next February 1 and 20 cents more on August 1 next year.

The increases stem, in part, from a construction union drive in Hawaii to attain wage parity with national and West Coast averages.

Bricklayers and plasterers, now at $3.65, will negotiate new contracts late this year. And they are expected to aim for a settlement giving them $4.00.

Other construction trades have been obtaining pay boosts of 20 to 25 cents an hour in the union catch-up drive.

Sister quarries share Michigan Tractor Shovel fleet, report

6 machines do the work of 12

At McDonough Brothers' two quarries near San Antonio, Texas, six Michigan Tractor Shovels are doing the material handling normally assigned a fleet of loaders *and dozers* at least twice as big.

Power, speed, and capacity of their five 262 hp, 4½ yard Model 275A Michigans take care of all the heavy work (except shot rock loading) at both quarries, both crushers, and at an adjacent 7500 lb continuous-mix bituminous plant . . . while a smaller 1¼ yd Model 75A stockpile-loads the 4 and 6 yd trucks and handles scattered odd jobs.

All told, the Michigans regularly handle eight major jobs:

Load all trucks hauling stockpiled materials produced by both crushing plants . . . twenty-four or more separate stockpiles.

Dress all stockpiles.

Load one-third of all 70 ton railroad gondola cars at both plants.

Replace donkey engines for moving and spotting gondolas.

Load all trucks hauling aggregates and sand to charge the bituminous plant.

Truck-load finished bituminous materials.

Clean quarry floors after blasting and push shots up to the heavy rock shovels for loading.

Maintain all haul roads in all plant areas.

Loading time on all these assignments has proved exceptionally fast. A typical 12 yd semi is loaded in only 3 passes of a Model 275A's 4½ yd bucket *and an average of 72 seconds.* A typical 70 ton gondola car is loaded in 5 minutes or less.

McDonough Brothers purchased their first Michigan five years ago—a Model 175A with 2¾ yd bucket. Three years, and over 10,000 meter hours later, it was traded for a larger Model 275A. Then expanding operations, combined with Michigan's excellent performance, caused the addition of four more Model 275A Michigans and one Model 75A to bring the fleet up to present strength.

Typical of the performance turned in by the Michigan today is an hourmeter reading taken at random from one Model 275A. In 17 months of operation, it showed 4,915 hours —an average of 66.4 hours worked each week since purchase.

Co-owners Jim, Dan and John McDonough are completely satisfied with their Michigan units. "Michigan Tractor Shovels have proven highly successful in our quarry operations," reports Jim McDonough, "And we like the dealer service organization (Waukesha Sales & Service, Inc., San Antonio, Texas) behind them."

Michigan is a registered trademark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division

CLARK EQUIPMENT

2401 Pipestone Road
Benton Harbor 2, Michigan
In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario

Contract Controls Arbitration

Court rules that local statute does not apply to arbitration of a dispute under terms of contract

The rules of the American Arbitration Association do not provide for detailed findings of fact and conclusions of law. If a construction contract calls for AAA arbitration, those rules—and not provisions for a local ordinance—apply.

That was the conclusion reached by a federal court in the following case:

C. M. Hale Co. entered into an agreement with Mr. & Mrs. Friedman for the erection of a dwelling in the District of Columbia.

Throughout the building period, numerous disputes arose. The owners contended that the work was not being performed properly, nor on time. Hale claimed the delay in the performance of the work resulted from changes in the original plans which caused an increase in the cost of the work. The contractor also contended that the owners had failed to make payments when due.

As a consequence of these disputes, each of the parties to the contract informed the other that he considered the contract breached. Hale filed a mechanic's lien, claiming a balance of $12,957.69 due under the contract and brought an action to recover the amount. The owners counterclaimed damages in the amount of $15,000 for the alleged failure of Hale to perform the contract.

The contract provided that all disputes that might arise in connection with the performance of the work would be referred to the American Arbitration Association for arbitration. The court, with the consent of both parties, agreed to submit the dispute to arbitration.

After extensive hearings, the arbitrator selected by the American Arbitration Association found that Hale owed Friedman as damages for failure to complete the house the sum of $7,984.95 and that Friedman owed Hale for labor and materials furnished the sum of $3,497.15.

Friedman, he ruled, was entitled to the difference in the above amounts, namely $4,487.80. The court granted an application to enter judgment accordingly.

Hale appealed, contending that the arbitration proceeding was governed by the District of Columbia Code, dealing with the referral of issues to a referee. The code requires the referee to submit findings of fact and law. The arbitrator failed to comply with this requirement.

The appellate court[1] affirmed the judgment entered by the lower court. It held that the order submitting the disputes to arbitration provided that the arbitration was to be conducted in accordance with the rules of the American Arbitration Association. Section 41 of the rules of the Association reads:

"Form. The award shall be in writing and shall be signed by the sole arbitrator or by a majority if there be more than one. It shall be executed in the manner required by law."

The appellate court held that the rules of the American Arbitration Association do not provide for detailed findings of fact and conclusions of law. In order to set aside the award, the court said, we "would have to hold that those rules implicitly provide for such detailed findings when the arbitration occurs in the District of Columbia. This would be equivalent to holding that the Association is bound to comply with the statutory rules respecting arbitration in whatever jurisdiction the controversy arises.

Further, the provision in the rules of the Association that the award shall be 'executed' in accordance with law does not require the making of findings or the giving of reasons. Cf. (compare) Bernhardt v. Polygraphic Co., 350 U. S. 198, 76 S. Ct. 273, 100 L. Ed. 199."

The court pointed out that had the arbitrator been appointed under the local statute, a different result might have been reached.

(1) Hale v. Friedman, 281 F. 2d 635, U.S. Court of Appeals, District of Columbia, June 30, 1960.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts; Legal Guide for Contractors, Architects and Engineers; and Legal Cases for Contractors, Architects and Engineers.*

OFFICIAL PROPOSALS

Bids: June 26, 1961

Department of Water Works City of Dallas, Texas

72-Inch Raw Water Transmission Line Project

Plans and specifications will be available, beginning May 29, 1961, for the construction of 80,926 linear feet of 72-inch concrete pipe line, and appurtenances. The pipe line will lie in portions of three Texas counties —Hunt, Van Zandt and Kaufman, and will have a construction cost of approximately $5,000,000.00.

Bids will be received by the City of Dallas until 1:30 P.M., June 26, 1961, and will be publicly opened and read aloud by the City Council at 2:00 P.M. on the same day. No deposit for the plans and specifications will be required but a $10.00 handling and mailing charge will be made. Plans and specifications may be obtained at the following address:

Dallas City Water Works
301 Municipal Building
Dallas, Texas
Attn: Mr. Russell Cook

For further information call or write either of the following:

1. Forrest & Cotton, Inc, Consulting Engineers
   600 Vaughn Building
   Dallas, Texas
   Attn: Mr. A. Martelli, RIverside 8-2121
2. Dallas City Water Works
   301 Municipal Building
   Dallas, Texas
   Attn: Mr. Russell Cook, RIverside 8-9711, Ext. 349 or Mr. Art Briggs, RIverside 8-9711, Ext. 326

The supervision of construction will be provided by the designing Engineers, Forrest & Cotton, Inc.

Bid, Performance and Payment Bonds will be required.

The right is reserved to reject any and all bids.

Henry J. Graeser
Superintendent,
Dallas City Water Works

Bids: June 13, 1961

New Jersey Turnpike Authority

ADVERTISEMENT FOR PROPOSALS
CONTRACT NO. R-80

Proposals are invited for Contract No. R-80 which involves the furnishing and installation of roadway lighting facilities, and other incidental work, in connection with improvements at the Carteret Interchange in Middlesex and Union Counties, New Jersey.

The principal items of work include:

Trenching and Backfilling	13,850 Lin. Ft.
Asbestos-Cement Conduits	14,200 Lin. Ft.
Lighting Conductors	77,450 Lin. Ft.
Concrete Junction Boxes	111 Units
Lighting Standards	129 Units
Transformer Room Installation	Lump Sum

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 o'clock, Eastern Daylight Saving Time, on the morning of June 13, 1961, at which time and place said proposals will be publicly opened and read.

Contract documents may be examined during office hours on or after May 24, 1961, at the office of the Authority, and will be furnished upon payment of Ten Dollars ($10.00) for each set, not refundable.

NEW JERSEY TURNPIKE AUTHORITY
Joseph Morecraft, Jr., Chairman

May 18, 1961
R-80

OFFICIAL PROPOSALS

Bids: June 7, 1961

State of Delaware
Delaware State Highway Department
Notice to Contractors

Sealed proposals will be received by the State Highway Department of the State of Delaware until 2:00 P.M. (E.D.S.T.) June 7, 1961, for the following contracts: CONTRACT I-1(21)-1, FEDERAL-AID PROJECTS I-95-1(11) AND I-95-1(18), BASIN ROAD INTERCHANGE, New Castle County. Stabilize, grade, construct 2 major bridge structures 9" Reinf. Conc. Paving and Adjustments to Gas & Water Utilities. (Completion Time 450 Calendar Days). The principal work items are: 550,000 C.Y. Borrow; 6,000 C.Y. Portland Cem. Conc. Pavement; 2,548 C.Y. Portland Cem. Conc. Masonry; 826,000 Lbs. Structural Steel (Approx. Weight); 14,000 L.F. Cast-in-Place Conc. Piles; 370,000 C.Y. Swamp Excavation; 480,000 C.Y. Special Fill. CONTRACT I-1(23), FEDERAL-AID PROJECT I-95-1(15), STABILIZE SOUTH PORTION OF CHRISTINA INTERCHANGE, New Castle County. Excavating Unsuitable Material and Backfilling to Elevation 5.5'. (Completion Time 600 Calendar Days). The principal work items are: 455,000 C.Y. Channel Excavation; 32,000 C.Y. Borrow; 2,150,000 C.Y. Swamp Excavation; 2,750,000 C.Y. Special Fill. CONTRACT I-1(24), FEDERAL-AID PROJECT I-95-1(16), STABILIZE NORTH PORTION OF CHRISTINA INTERCHANGE, New Castle County. Stabilization by use of Sand Drains and Excavation and Backfilling to Elevation 5.5'. (Completion Time 600 Calendar Days). The principal work items are: 1,850,000 C.Y. Borrow; 1,250,000 C.Y. Swamp Excavation, 1,650,000 C.Y. Special Fill; 775,000 L.F. Sand Drains; 160,000 C.Y. Sand Blanket. The Department will also accept bids for a COMBINATION PROJECT which includes all the work contemplated under each of the above listed individual contracts. The Completion Time for the Combination Project is 750 Calendar Days. The major work items for the Combination Project would be: 472,000 C.Y. Channel Excavation; 2,432,000 C.Y. Borrow; 5,828 C.Y. Portland Cem. Conc. Masonry; 3,770,000 C.Y. Swamp Excavation; 4,880,000 C.Y. Special Fill; 775,000 L.F. Sand Drains; 160,000 C.Y. Sand Blanket. PREQUALIFICATION HAS BEEN WAIVED FOR THESE CONTRACTS. Prospective bidders may obtain contract documents from the Highway Department office, Third Floor, Administration Building, Dover, Delaware. Delaware State Highway Department, By: J. Gordon Smith, Chairman, William J. Miller, Jr., Acting Chief Engineer, May 10, 1961, Dover, Delaware.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5606) will be received at Madera, California, until 9 a.m., Pacific Standard Time (10 a.m. Pacific Daylight Savings Time) June 27, 1961, for furnishing labor and materials for Earthwork and Structures Madera Distribution System, Extension Part 2, Central Valley Project, California. Location near Fresno, California, in Madera County. Principal items are 330,000 cu. yds. excavation; 11,500 lin. ft. precast concrete pressure pipelines; 112,000 lin. ft. cast-in-place concrete pipelines; and other work. Completion time 530 days. For particulars, address Bureau of Reclamation, P. O. Box 689, Madera, California; P. O. Box 2511, Sacramento, California; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

Sealed bids for alterations for installation of mail-flo machinery at the U. S. Post Office (Main), Philadelphia, Pa., will be received until 2:00 P.M., June 23, 1961; and then publicly opened. Bidding material may be obtained from the Business Service Center, General Services Administration, 250 Hudson Street, New York 13, N. Y., from the Custodian of the building where the work is to be done, or from the Chief, Philadelphia Field Office, Design & Construction Division, Room 902, U. S. Custom House & Appraisers Stores, 2nd & Chestnut Street, Philadelphia 6, Pa.

OFFICIAL PROPOSALS

OFFICIAL PROPOSALS

AUSTRALIA

SNOWY MOUNTAINS HYDRO-ELECTRIC AUTHORITY

Tenders are invited for Schedules of Rates contract for furnishing labour and materials and performing all work for the construction in New South Wales, Australia, of the following:

CONTRACT NO. 20,062—

ISLAND BEND DAM
SNOWY-GEEHI TUNNEL (SNOWY SECTION)
AND APPURTENANT WORKS

Island Bend Dam will be a concrete gravity dam approximately 135 feet high with a crest length of approximately 470 feet.

The Snowy Section of Snowy-Geehi Tunnel will comprise the construction of approximately 17,900 feet of tunnel, including approximately 570 feet of 16 feet diameter lined circular tunnel, 120 feet of 28 feet diameter lined circular tunnel, 25 feet of transition and 17,200 feet of horseshoe shaped tunnel partially lined with concrete, 20 feet 4 inches high and 20 feet 8 inches wide. The contract also includes the construction of a control structure under ground with a vertical control shaft approximately 500 feet deep and a surface hoist house.

RELATION TO OTHER WORK

The Authority has recently invited tenders for the construction of the Eucumbene-Snowy Tunnel under two contracts—Contract No. 20,044 and Contract No. 20,045. The works of Contract No. 20,062 are immediately adjacent to those of Contract No. 20,045 and the provisions of the specifications for Contract No. 20,062 will, where appropriate, be substantially similar to those of Contracts Nos. 20,044 and 20,045.

ALTERNATIVE TENDERS

Tenderers are invited to submit tenders for each of Contracts Nos. 20,044 and 20,045 and 20,062 separately and may submit alternative tenders based on the following combinations of contracts:

(a) Contract No. 20,044 and Contract No. 20,045 together;
(b) Contract No. 20,045 and Contract No. 20,062 together;
(c) Contract No. 20,044, Contract No. 20,045 and Contract No. 20,062 together.

PRELIMINARY INFORMATION

Initial information comprising a description of the works, preliminary drawings and a preliminary schedule of quantities will be available, free of charge, at the Head Office of the Authority at Cooma on 22nd May 1961 and at the places set out below for tender documents on 29th May 1961.

TENDER DOCUMENTS

The tender documents consisting of the form of Tender, Conditions of Tendering, General Conditions of Contract, Draft Form of Agreement, Schedules of Rates, Tables of Estimated Quantities and Amounts, Specification and Drawings will be available on 22nd June 1961 and may be obtained by prospective Tenderers on payment of $22.50 per set on application to:

Australian High Commissioner,
Royal Bank Chambers,
100 Sparks Street,
OTTAWA, ONTARIO, CANADA.

Australian Consulate-General,
International Building,
Rockefeller Center,
636 Fifth Avenue,
NEW YORK, N. Y., U.S.A.

Australian Consulate-General,
125 Kearney Street,
SAN FRANCISCO, CALIFORNIA,
U.S.A.

Liaison Officer,
Snowy Mountains Hydro-electric Authority,
C/—United States Bureau of Reclamation,
Federal Center,
DENVER, COLORADO, U.S.A.

Four additional sets of documents for purposes of tendering will be provided free of charge at the time of inspection of the site.

All relevant information may be obtained from the above offices.

SUBMISSION OF TENDERS

Tenders for the contract must be submitted in duplication in accordance with the Conditions of Tendering, enclosed in sealed envelopes appropriately endorsed with the contract number and name of the works tendered for, addressed to:

The Business Manager,
Snowy Mountains Hydro-electric Authority,
Post Office Box 332,
COOMA NORTH, N.S.W., AUSTRALIA.

The tenders must be lodged in the Tender Box at Head Office of the Authority at Cooma or be sent by prepaid post in time to be delivered in ordinary course of mail by 12:00 noon on Monday, 4th September 1961

K. See, Business Manager

Bids: June 28, 1961

The City of New Rochelle, N. Y.

NOTICE TO BIDDERS

1. Sealed bids will be received by the DEPUTY DIRECTOR OF PUBLIC WORKS of the CITY OF NEW ROCHELLE, N. Y. at the BOARD OF EDUCATION ADMINISTRATIVE BUILDING, 131 Huguenot Street, New Rochelle, N. Y. until 11:00 A.M., Eastern Daylight Savings Time, June 28, 1961, for the following Contracts:

CONTRACT NO. 1—GENERAL CONSTRUCTION WORK
CONTRACT NO. 2—HEATING, AIR-CONDITIONING AND VENTILATING WORK
CONTRACT NO. 3—PLUMBING WORK
CONTRACT NO. 4—ELECTRICAL WORK

required for:

CITY AND SCHOOL DISTRICT OFFICES, NEW ROCHELLE, NEW YORK (Alternations and Additions to the old Albert Leonard Junior High School Building—D.P.W. PROJECT NO. 09-148-P1)

in accordance with the Plans, Specifications and Contract Documents on file in the BUREAU OF ENGINEERING and the Architects' Office, where they may be examined beginning at 9:00 A.M., Monday, May 29, 1961.

2. Each bid must be accompanied by a DEPOSIT in the form of a certified check or cashier's check, made payable to the CITY OF NEW ROCHELLE, N. Y., in the amount of Five Per Cent (5%) of the Bid. Bid Bonds or cash will not be accepted.

3. Copies of Plans, Specifications and Contract Documents may be obtained at the office of FRED W. LYON AND KNAPPE AND JOHNSON, ASSOCIATED ARCHITECTS, 299 NORTH AVENUE, NEW ROCHELLE, N. Y., on and after May 29, 1961 upon payment of ONE HUNDRED ($100.00) DOLLARS as a deposit to guarantee the safe return thereof. Plan deposits will be accepted only in the form of checks made payable to the CITY OF NEW ROCHELLE, N. Y. Any bidder returning such set within one week from the date of the opening of the bids, and in good condition, will be refunded his payment; any non-bidder returning such set within one week from the date of the opening of bids, and in good condition, will be refunded one-half of his payment, or FIFTY ($50.00) DOLLARS. If documents are not returned within the specified time, the payment will be forfeited.

5. The City reserves the right to reject any and all bids.

ARTHUR F. JONAS
Deputy Director of Public Works

Date: May 19, 1961

OFFICIAL PROPOSALS

Bids: June 22, 1961

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and Canal Law, for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 22nd day of June 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, F. J. Fuller, District Engineer, 353 Broadway, Albany, New York						
Rensselaer Rte. 22	FARC 61-85	Petersburg-North Petersburg, S.H. 5059; Stone School House-North Petersburg-Vermont State Line, S.H. 1424 Proj. F-396(5)	2.35	Asphalt Concrete = 2.32 Mi. Misc. Work = 0.03 Mi.	$33,000 Plans $5	$585,000
Saratoga Warren Rte. 9	RC61-82 C61-13	South Glens Falls Village: Saratoga Avenue and Main Street, S.H. 5598; City of Glens Falls: Glen Street Arterial Highway (Hudson River to Oakland Street)	0.28	Asphalt Concrete Reconstruction and Widening of Bridge Deck 736' Long Prestressed Concrete Beam Bridge, 64.6' Span	$27,000 Plans $5	486,000
Warren Rte. 8	RC61-97	Riverside-Wevertown, Part 1, S.H. 5055; Bridge No. 1 (Riverside Bridge)	0.06	Bridge Repairs	$3,900 Plans $5	71,000
Washington Rte. 372	RC61-87	Cambridge Village, S.H. 1082	1.02	Asphalt Concrete	$2,500 Plans $5	42,000
DISTRICT No. 2, L. Ketchum, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Fulton Rte. 349	RC61-100	Gloversville-Mayfield, S.H. 33; Gloversville-Broadalbin, Pt. 1, S.H. 248; Gloversville-Broadalbin, Pt. 2, S.H. 1935	3.58	Asphalt Concrete Type 1A	$8,000 Plans $5	141,000
Fulton Rte. 29	FARC 61-65	Johnstown-Broadalbin, Pt. 1, S.H. 544; Johnstown-Broadalbin, Pt. 2, S.H. 543 Proj. No. F-340(6)	6.42	Cement Concrete Pavt.=6.38 Mi. Misc. Work = 0.04 Mi.	$100,000 Plans $5	1,833,000
Fulton Rte. 30	RC 61-98	Northville Village: Main Street and Reed Street S.H. 9365	0.49	Asphalt Concrete	$2,000 Plans $5	39,000
Herkimer Rte. 5	RC 61-88	Little Falls-East Creek, S.H. 456 East Creek, S.H. 5159	1.26	Asphalt Concrete Type 1A	$5,500 Plans $5	100,000
Herkimer Rte. 28	RC 61-89	Middleville Village-Newport Village, S.H. 5064; Middleville-Poland, S.H. 461; Poland Village-Coldbrook Village, S.H. 5069	4.34	Asphalt Concrete Type 1A	$13,000 Plans $5	237,000
Herkimer	M-61-8	Days Spillway-Barge Canal-App. ¾ Mi. East of Utica City Line	....	Rehabilitation of Race Behind Spillway Headgate	$2,500 Plans $5	44,500
Oneida Rte. 412 & 12B	RC 61-90	Hamilton College-Clinton, S.H. 1610; Clinton Village-College Street, S.H. 9061; Clinton Village, S.H. 877	0.72	Asphalt Concrete Type 2A	$2,000 Plans $5	35,000
Oneida Rte. 5	RC 61-91	Utica-Oneida Castle, Part 2, S.H. 271; Utica-Oneida Castle, Part 1, S.H. 250; Kirkland-New Hartford, S.H. 9205	3.09	Asphalt Concrete Type 1A	$13,000 Plans $5	240,000
Oneida	M-61-7	New London Spillway	....	Repair Spillway	$1,400 Plans $5	24,500
Oneida	U. S. 105	Lock 22E and Lock 21E in and Near the City of Rome	....	New Approach Slabs, Gates and Misc. Work	5% of Bid Plans $10	Confidential
DISTRICT No. 3, E. E. Towlson, District Engineer, 333 E. Washington Street, Syracuse, New York						
Cayuga Rte. 104A	RC 61-73	Sterling-Oswego Road, S.H. 685	4.09	Asphalt Concrete Type 1A	$11,000 Plans $5	201,000
Oswego Int. Trg. Rte. 81	FITS 61-16	Interstate Route 505 (Central Square-Parish) FISH 58-26 (Parish-Jefferson County Line, Pt. 1) FISH 59-1 (Parish-Jefferson County Line, Pt. 2) FISH 59-22 Proj. No. I-81-2(29)	20.01	Traffic Signs	$3,300 Plans $5	58,000
Seneca Rtes. 5, 20, 96A	FATS 61-17	Geneva-McDougall, S.H. 8183; Geneva-Waterloo, S.H. 5087; Geneva-Waterloo, Parts 2 & 3, S.H. 8240 Proj. F-U-452(9), U-406(6)	2.69	Traffic Signs and Delineators	$1,500 Plans $5	$26,000
Tompkins Rte. 13	RC 61-72	Ithaca-Varna, S.H. 1867; Ithaca-Dryden, Part 1, S.H. 681 Varna Crossing, S.H. 5225	5.06	Asphalt Concrete Type 1A	$21,000 Plans $5	374,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Genesee Rte. 63	RC 61-99	Alabama-Batavia, Pt. 2, S.H. 1402A; Alabama-Batavia, Pt. 2, S.H. 1402B; Alabama-Batavia, Pt. 2, S.H. 1402	2.95	Asphalt Concrete = 2.82 Mi. Misc. Work = 0.13 Mi.	$19,000 Plans $5	340,000
Genesee Rte. 262	RC 61-22	Elba-Byron, Part 1, S.H. 48-14; Elba-Byron, Part 2, FASSH 48-13; Elba-Byron, Part 3, FASSH 50-6	6.54	Asphalt Concrete	$17,000 Plans $5	301,000
Monroe	M-61-6	East Guard Lock-Erie Canal—Rochester	....	Cleaning and Painting	$400 Plans $5	7,500
Wyoming Rte. 78	FARC 61-2	Java Center-Waldo Corners-Smith Corners, S.H. 1716 Java Center-Java Village, S.H. 894 Proj. F-1158(2)	5.95	Asphalt Concrete = 5.81 Mi. Misc. Work = 0.14 Mi.	$43,000 Plans $5	792,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, 65 Court Street, Buffalo 2, New York						
Erie Rte. 78	RC 61-76	Transit, Part 1, S.H. 88 Transit, Part 2, S.H. 89	7.00	Asphalt Concrete	$47,000 Plans $5	865,000
Erie Rte. 62	RC 61-101	North Collins-Lawton, S.H. 524 Hamburg-North Collins, S.H. 523	4.87	Asphalt Concrete = 4.78 Mi. Misc. Work = 0.09 Mi.	$31,000 Plans $5	567,000
DISTRICT No. 6, Wm. J. Dennis, District Engineer, 30 West Main St., Hornell, N. Y.						
Steuben Rte. 15	FARC 61-86	Campbell-Bath, S.H. 5224; Bath-Savona, S.H. 754 Proj. F-225(19)	3.02	Asphalt Concrete	$16,000 Plans $5	294,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee St., Watertown, N. Y.						
Franklin & Jefferson & St. Lawrence Rtes. 3, 177, 87, 186, 56, 37C, 10	RC 61-94	Br. No. 1, S.H. 985A; N.Y.C.R.R. Overhead, Arsenal St. Watertown Arterial: Br. No. 1, S.H. 428; Br. No. 2, S.H. 835; Br. No. 3, S.H. 8418; Br. No. 2, S.H. 1168; Br. No. 2, S.H. 1265; Br. No. 1, S.H. 1587; Br. No. 1, S.H. 1862	....	Cleaning & Painting 9 Bridges	$1,100 Plans $5	20,000
St. Lawrence Rte. 68	RC 61-102	Ogdensburg-Canton, Pt. 1, S.H. 732 Ogdensburg-Canton, Pt. 2, S.H. 733	2.86	Asphalt Concrete, Type 1A	$7,000 Plans $5	124,000
DISTRICT No. 9, J. C. Frederick, District Engineer, 71 Frederick St., Binghamton, N. Y.						
Chenango Rte. 23	RC 61-67	Norwich-Plymouth, S.H. 112	4.76	Asphalt Concrete	$15,000 Plans $5	262,000
Delaware Rte. 17B	RC 61-69	Hancock-Long Eddy, Pt. 2, S.H. 8503 Hancock-Long Eddy, Pt. 1, S.H. 5671	5.30	Asphalt Concrete	$14,000 Plans $5	262,000
Otsego Rte. 28	RC 61-68	Milford-Cooperstown, S.H. 5445	6.12	Asphalt Concrete	$12,000 Plans $5	228,000
Sullivan Rte. 42	RC 61-66	Forestburg-Monticello, S.H. 1708	6.72	Asphalt Concrete	$18,000 Plans $5	326,000
Sullivan & Ulster Rte. 209	FARC 61-93	Port Jervis-Wurtsboro, Pt. 2, S.H. 8287 Wurtsboro-Ellenville, S.H. 8080 Proj. No. F-443(5)	8.74	Asphalt Concrete, Type 1A; 1 Br. Corrugated Plate Pipe & Arch, 33.17' ± SKEW Span; 2 Brs. Comp. WF Beam: 1 Span 100'; 1 Span 84'	$140,000 Plans $5	2,607,000
DISTRICT No. 10, A. M. Sarr, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Nassau Rte. 24	FALIE 61-4	Long Island Expressway (Jericho Turnpike-South Oyster Bay Road) Proj. U-862(34)	3.05	Roadside Development	$12,000 Plans $5	210,000
Suffolk Rte. 27A	RC 61-92	Babylon-Bayshore, S.H. 743	2.46	Asphalt Concrete = 2.37 Mi. Misc. Work = 0.09 Mi.	$27,000 Plans $5	489,000

Any projects in this letting that are on the Federal Aid highway system are subject to the provisions of the "Federal Aid Highway Act of 1956," being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifi-

(Continued on opposite page)

OFFICIAL PROPOSALS
(Continued from opposite page)

particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Department of Public Works" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bid deposit, the execution of the contract and bond shall conform to the provisions of the Highway Law, as set forth in the "Information for Bidders."

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: June 23, 1961

Invitation to Qualified Bidders
Tunnel Sewer Construction

Sealed bids for the construction of the 7th Street Road Trunk Sewer and Manslick Road Main Sanitary Sewer—Section A will be received at the office of the Metropolitan Sewer District, 412 West Market Street, Louisville 2, Kentucky, until 12:00 Noon (C.D.S.T.) on Friday, June 23, 1961. This Contract (No. 349) provides for the construction of approximately 5,657 linear feet of sewers and appurtenances. This includes 3,724 feet of 60-inch Reinforced Concrete pipe, alternate with a monolithic concrete section; 1,585 feet of 36-inch and 118 feet of 24-inch Reinforced Concrete pipe; and 220 feet of 15-inch Vitrified Clay pipe. Tunneling methods will be required in the construction of 3,655 feet of the 60-inch sewer and 624 feet of the 36-inch sewer. Plans and specifications will be available at the District's office after 12:00 Noon (C.D.S.T.) on Friday, June 2, 1961; these will be furnished to prospective bidders upon deposit of $20.00. Each bidder's proposal must be accompanied by a certified check in the amount of $40,000. The District reserves the right to reject any or all bids.

LOUISVILLE AND JEFFERSON COUNTY
METROPOLITAN SEWER DISTRICT
James G. Becker
Secretary-Treasurer

Bids: Sept. 4, 1961

Republica De Nicaragua
Empresa Nacional De Luz Y Fuerza
Managua

INVITATION FOR BIDS
TMV HYDROELECTRIC SYSTEM—First Stage

The Empresa Nacional de Luz y Fuerza, an autonomous Entity of the State, Republic of Nicaragua, announces that having obtained financing from the International Bank for Reconstruction and Development and from the Development Loan Fund for the construction of the first stage of the Tuma-Matagalpa-Viejo (TMV) Hydroelectric System, will receive sealed Bids addressed to the Gerencia de Construcción (Construction Management) of the same Entity for the fabrication, supply and erection of the equipment herein described, until the 4th day of September, 1961, at 15 hours, at which time the Bids will be publicly opened and read.

Contract No. IC-6
Project: TMV System—First Stage
Work: Electromechanical Equipment for the Rio Cacao Powerplant.

Copies of the Contract Documents, Drawing and Specifications may be obtained from:

1. Empresa Nacional de Luz y Fuerza, Gerencia de Construcción, Managua, Nicaragua, upon payment of 700 Cordobas for the first set, and 210 Cordobas for each additional set;

2. Electroconsult Engineers, 13 Via Cavallotti, Milan, Italy, upon payment of 100 US Dollars for the first set, and 30 US Dollars for each additional set.

Contract Documents, Drawings and Specifications may be examined at the two above mentioned places, and at:

3. Nicaraguan Embassy in Washington, D.C., U.S.A., 1627 New Hampshire Ave., N.W.;

4. General Consulate of Nicaragua in New York, N.Y., U.S.A., 1720 Ave. of the Americas, Rockefeller Center, Suite 2200.

Each Bid shall be accompanied by a Bid Bond for a sum equal to 5% of the total Bid price.

The general features of the Works are:

Location: about 6 Km west of Jinotega, Department of Jinotega, Nicaragua.

Description:

a. Tunnel inlet trashracks, raking machine, slide gate and wheel gate;

b. A 2.40 m I.D. butterfly valve, with related air valve, overhead crane and minor accessories;

c. A 700 m long, 2.60 m I.D. steel penstock;

d. Two turbine inlet valves, rotary type;

e. Two 25 500 kW, 600 r p m, vertical shaft Francis turbines, 267.50 m rated head, 11 m³/sec rated flow, with synchronous relief valve and governor;

f. Two 31 500 kVA, 600 r p m, 60 Hz synchronous generators;

g. Medium and low voltage equipment for the complete plant, including station service equipment but excluding power transformers and related substation;

h. Powerhouse overhead traveling crane, 90 t rated capacity;

i. Miscellaneous equipment, including telephone system, cooling water and drainage system, 1-ton elevator and minor items.

Partial Bids for items a) b) c), or for items d) e) f) g) h) i), or comprehensive Bids will be considered; similarly partial Contract may be awarded according to the above mentioned subdivision (Contracts No. IC-3 and IC-5 respectively). Partial Contracts may be awarded to comprehensive Bidders.

Bids: June 22, 1961

The Port of New York Authority

ELIZABETH-PORT AUTHORITY PIERS
BERTH 52—UPLAND AREA
PAVING AND UTILITIES
CONTRACT EP-110.009

Sealed proposals for the construction of pavement, utilities and tracks for the upland area at Berth 52 at Elizabeth-Port Authority Piers will be received at the office of the Chief Engineer of the Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Thursday, June 22, 1961, at which time said proposals will be opened and read in Room No. 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, June 1, 1961

Bids: June 20, 1961

Rutgers, the State University

PROPOSAL
NOTICE TO CONTRACTORS

Separate sealed bids for the construction of the Addition to the University Gymnasium for Rutgers, The State University will be received in the Office of the Vice President and Treasurer, Room 101, Queens Building, Rutgers, The State University, New Brunswick, New Jersey, until 2:00 P.M., prevailing time, Tuesday, June 20, 1961, and then publicly opened and read aloud, for the following work:

Contract #1—General Construction Work
#2—Structural Steel-Miscellaneous Metal Work
#3—Plumbing Work
#4—Heating & Ventilating Work
#5—Electrical Work

Information for Bidders, Form of Proposal, Form of Contract, Plans and Specifications and Forms of Bid Bond and Performance Bond may be examined at the Office of the Architect, Edgar I. Williams, 101 Park Avenue, New York 17, New York, or at the Department of Physical Plant, Rutgers, The State University, 12 College Avenue, New Brunswick, New Jersey. Drawings, specifications and bid forms may be obtained by qualified bidders IN PERSON ONLY during office hours, from Rutgers, The State University, 12 College Avenue, New Brunswick, N. J., or from the Office of the Architect, upon deposit of a certified check drawn to the order of Rutgers, The State University in the amount of fifty ($50.00) dollars for each set. PLANS AND SPECIFICATIONS WILL NOT BE MAILED. Any bidder, upon returning the plans and specifications promptly and in good condition, will be refunded his full deposit and any non-bidder or subcontractor upon so returning the plans and specifications will be refunded twenty-five ($25.00) dollars.

Bids must be made on the standard proposal form and must be accompanied by a bid bond or a certified check, drawn to the order of Rutgers, The State University, for not less than 10% of the amount of the bid and must be delivered at the above place on or before the hour named as no bid will be accepted after the hour specified. Bids not submitted on the standard proposal form or enclosed in other than a special addressed envelope will be considered informal and will be rejected. The successful bidders will be required to furnish surety bond in the full amount of the contract, of a company authorized to do business in the State of New Jersey, in the form and subject to the conditions provided in the specifications.

The owner reserves the right to waive any informalities in or to reject any and all bids and to award the contract in part or whole if deemed to the best interest of the University to do so.

No bidder may withdraw his bid within 45 days after the actual date of the opening thereof.

RUTGERS, THE STATE UNIVERSITY
Kenneth R. Erfft
Vice President and Treasurer

OFFICIAL PROPOSAL

RATE: $2.70 per line (or fraction) per insertion.

CLOSING DATE: 10.30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, P. O. Box 12, New York 36, N. Y.

OFFICIAL PROPOSALS

Bids: June 28, 1961

Triborough Bridge and Tunnel Authority

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., as follows:

Until 11 A.M. Wednesday, June 28, 1961

For Narrows Bridge Contract No. NB-6, Suspended Structure and Decks on Anchorages. Work includes the steelwork and concrete paving for a two level suspended structure at the entrance to New York Harbor.

Each bid must be accompanied by a deposit in the amount of $500,000.00.

Plans, specifications and contract documents may be purchased at the office of the Authority for $100.00, which will not be refunded.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5608) will be received at Paonia, Colorado, until 10 a.m., Mountain Standard Time, June 29, 1961, for furnishing labor and materials for Earthwork and Structures, Smith Fork Diversion Dam, Smith Fork Feeder Canal, Asnen Canal—Station 73+08 to End and Clipper Canal, Smith Fork Project, Colorado. Location near Crawford, Colorado. Principal items are 158,000 cu. yds. of excavation; 820 cu. yds. of concrete; 2,945 feet of 15- to 54-inch concrete pipe; and other work. Completion time 400 days. For particulars, address Bureau of Reclamation, Box 360, Salt Lake City, Utah; Box 346, Paonia, Colorado; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5611) will be received at Lewiston, California, until 1 p.m., Pacific Standard Time (2 p.m., Pacific Daylight Savings Time) July 6, 1961, for furnishing labor and materials for Earthwork, Structures and Surfacing for Relocation of Trinity County Road, Trinity Dam to Buckeye Creek, Central Valley Project, California. Location approximately 50 miles northwest of Redding, California. Principal items are 650,000 cu. yds. excavation for roadway; 3,048 lin. ft. furnishing and laying 8, 12, 18, 21, 24, 30, 36, and 42-inch diameter, various size gages, corrugated metal pipe; 206 lin. ft. furnishing and erecting 78-inch and 84-inch diameter multiple-plate corrugated metal pipe; 180 tons of liquid asphalt and paving asphalt; and other work. Completion time 400 days. For particulars, address Bureau of Reclamation, P. O. Box 2511, Sacramento 11, California; P. O. Box 247, Lewiston, California; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

Sealed bids from Small Business Concerns for extension and remodeling at the U. S. Post Office, Freehold, N. J. Proj. #00802-711 until 2:00 P.M., E.D.S.T. June 21, 1961, and then publicly opened. Bidding material may be obtained from the Business Service Center, General Services Administration, 250 Hudson Street, New York 13, N. Y. or from the custodian of the building where the work is to be done.

Sealed bids from Small Business Concerns for installation of a new air-conditioning system at Franklin D. Roosevelt Library, Hyde Park, N. Y., will be received until 2:00 PM, E.D.S.T., June 12, 1961, and then publicly opened. Bidding material may be obtained from the Business Service Center, General Services Administration, 250 Hudson Street, New York 13, N. Y. or from the Custodian of the building where the work is to be done.

Sealed bids from Small Business Concerns for alterations to warehouse space, Federal Building, Idlewild Airport, Jamaica, N. Y., will be received until 2:00 P.M., E.D.S.T., June 19, 1961, and then publicly opened. Bidding material may be obtained from the Business Service Center, General Services Administration, 250 Hudson Street, New York 13, N. Y., or from the Custodian of the building where the work is to be done.

EMPLOYMENT OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $45.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

JUNE 15TH ISSUE CLOSES JUNE 5TH

UNDISPLAYED RATE:

$2.70 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

HYDRO
MECHANICAL ENGINEER

Overseas Assignment
24-Month Contract

as

POWERHOUSE MECHANICAL ENGINEER

To supervise the construction of a Powerhouse on a Hydro-Electric dam in Thailand. Must have a minimum of five years experience on the installation of penstocks, radial gates, fixed wheel gates, turbines and the mechanical features of electrical switch gear. Experience in related work such as form work, concrete placement around equipment and the operational of hydro-electric equipment helpful.

24-Month contracts, living quarters furnished, excellent compensation.

Write fully include salary data

to

SVERDRUP & PARCEL AND ASSOCIATES, INC.

915 Olive St., St. Louis 1, Mo.

"Put Yourself in the Other Fellow's Place"

TO EMPLOYERS
TO EMPLOYEES

Letters written offering Employment or applying for same are written with the hope of satisfying a current need. An answer, regardless of whether it is favorable or not, is usually expected.

MR. EMPLOYER, won't you remove the mystery about the status of an employee's application by acknowledging all applicants and not just the promising candidates.

MR. EMPLOYEE you, too, can help by acknowledging applications and job offers. This would encourage more companies to answer position wanted ads in this section. We make this suggestion in a spirit of helpful cooperation between employers and employees.

This section will be the more useful to all as a result of this consideration.

Classified Advertising Division
McGRAW-HILL PUBLISHING CO., INC.
330 West 42nd St., New York 36, N. Y.

EMPLOYMENT PROBLEM?

When you are in need of specialized men for specialized jobs, contact them through an employment ad in this publication.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 645 N. Michigan Ave.
SAN FRANCISCO 11: 255 California St.

• *POSITIONS VACANT*

Structural Engineer-Midwest consulting firm seeks Ph.D. to design complex steel structures, reinforced and prestressed concrete. Preference will be given to applicants with practical experience. Permanent position with established firm in business since 1929. Moving expenses paid. Send resume, including education, experience, and personal qualifications to P-6245. Engineering News-Record.

Steam Power Plant Design Engineer—Minimum 5 years responsible experience, including supervision of personnel, in design of steam power plants. Progressive consulting engineering firm offers permanent employment with opportunity for personal development and advancement potential. Submit resume and salary requirements to Stanley Engineering Company, Muscatine, Iowa.

Electrical Engineer—Experienced in design of electric transmission, distribution and substation facilities. Progressive consulting engineering firm offers permanent employment with opportunity for personal development and advancement potential. Submit resume and salary requirements to Stanley Engineering Company, Muscatine, Iowa.

Engineer with Gunite Experience for Midwest territory. Must be capable of estimating all types work. Send resume and references P-6760, Engineering News-Record.

Sanitary Engineer with extensive experience in preliminary engineering and design of sanitary projects. Submit complete resume of education, experience and qualifications, together with salary requirements. Stanley Engineering Company, Hershey Building, Muscatine, Iowa.

Draftsmen, Structural-Experienced, Checkers and detailers of structural steel shop dwgs. Relocation expenses. Fink & Zwecker Co., 1100 Crescent Ave., N. E., Atlanta 9, Ga.

Assistant Township Engineer—Township of Woodbridge, New Jersey, population 78,000, is receiving applications for the position of Assistant Township Engineer. Work includes the development of engineering for municipal projects, such as roads, sewers, storm drains and other Public Works projects. Training and experience required; two years Public Works Engineering and a Civil Engineering Degree. Salary open. For information contact Carl F. Wheeler, Township Engineer, 1 Main Street, Woodbridge, N. J.

Water Works Engineer—Graduate engineer 5-10 years experience design, construction, testing distribution systems. Permanent employment water works management company. Philadelphia, Pa. Reply P-6767, Engineering News-Record.

Electric Engineer—Large automobile manufacturing firm in Midwest has immediate opening. Requires B.S. in Electrical Engineering with industrial plant experience to follow automated machinery installation and plant engineering design including power distribution, lighting, etc. Age range 25-45. Send complete resume and approximate salary requirement to P-6800, Engineering News-Record.

(Continued on opposite page)

REPRESENTATIVES or DISTRIBUTORS for STRUCTURAL STEEL PRODUCTS

Fabricator of unique line of stock-designed structural steel products seeks aggressive representative immediately for Central and Atlantic areas, excluding Pa., Del., N. J. and New England. Will also consider representatives for other sections of country. To contact architects, structural engineers, contractors, builders, etc. Should have own qualified estimators, detailers, draftsmen, and erectors available. Product advertisements draw tremendous response from all over the world, and initial leads will be furnished.

Write **RW-6684,** Engineering News-Record Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

DIRECTOR OF SALES STRUCTURAL STEEL FABRICATION

Large middlewest structural steel fabricating company offers the ultimate challenge for professional and financial growth. This top calibre man must be thoroughly experienced and well associated in bridge and heavy structural fabrication sales.

Send resume including education, personal and business background to

P6775 Engineering News-Record
645 N. Michigan Ave., Chicago 11, Ill.

• POSITIONS VACANT

(Continued from opposite page)

Senior Estimator—Project Manager. Permanent position available with Houston based General Contractor. Civil or Architectural engineering degree preferred, with experience in estimating, including quantity survey and pricing, contract purchasing, shop drawing approval, expediting. Provide complete resume of experience, education and salary requirements. All replies confidential. P-6774, Engineering News-Record.

Accountant—San Francisco Branch: requires mature, experienced Construction Accountant, able keep full set of books; prepare cost, payroll, union returns; self-starter of proven integrity and success. Permanent job, salary open. Send resume stating date available and salary requirement, in confidence, to Controller, Roscoe-Ajax Construction Co., Inc., 1107-19th Street, Northwest, Washington 6, D. C.

Test Engineer—Midwestern Machinery Manufacturer seeks graduate engineer with heavy vehicle testing and/or operational experience. All phases of testing. Excellent opportunity in very desirable location. P-6793, Engineering News-Record.

Chief Estimator—Leading West Coast contractor has an opening for a top man with 10 to 15 years heavy construction estimating and a minimum of 5 years field experience. Applicant must have been part of a construction company Management Staff, and a portion of his experience must have been in the Western States. Salary is open, with excellent opportunity for the right man. P-6795, Engineering News-Record.

Wanted—Graduate Civil Engineer experienced in sewer, water and concrete construction to work as foreman of construction crews for long established company in Northern Ohio area. Salary open. P-6806, Engineering News-Record.

• EMPLOYMENT SERVICES

"NER" describes hundreds of $7,000-$35,000 job openings monthly. Write for free copy. National Employment Reports, 20 E. Jackson, 902-B, Chicago 4.

• POSITIONS WANTED

General Contractors' Superintendent—age 43 —experienced power plants, sewerage plants, industrial. Prefer Illinois-Indiana location. Will relocate to suit. A-1 references. Reply to PW-6706, Engineering News-Record.

Construction Manager: 13 years chemical, textile & industrial experience. BS and MS Civil Engineering. Professional Engineer NY & Delaware. Will relocate in N. E. US. PW-6707, Engineering News-Record.

Superintendent—Experienced in excess of forty completed contracts for highway and heavy earth moving, bridges. Complete project planning and execution. Will relocate. Reply PW-6727, Engineering News-Record.

Structural Engineer, Graduate C.E., 36, 10 years design exp. in conc. and steel for industrial structures. Desire position Westcoast, West. PW-6729, Engineering News-Record.

(Continued on the following page)

CIVIL OR MECHANICAL ENGINEER NEW YORK OFFICE

Nation wide multiplant grain merchandising company offers permanent position to civil or mechanical engineer, preferably with Masters degree.

Applicants must have several years experience in structural design. Experience in design and construction of grain elevator or of installations of similar type will be helpful. Knowledge of material handling equipment such as conveyors, bucket elevators, etc. desired.

A few trips per year to interior locations from New York City base.

Please send resume complete with all personal details including salary requirements, to

P-6777, Engineering News-Record Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

ME's, CHEM E's, EE's plus CIVILS

When you think of INTEREST think of your job

When you think of GROWTH think of your job

When you think of CHALLENGE think of your job

When you think of your job think of McGraw-Hill

If you like to write, and engineering is your profession, consult with us about a career in engineering-journalism. For additional information, write: Mr. Jack Coyne, Room 506, McGraw-Hill Publishing Company, 330 West 42nd Street, New York 36, New York.

GENERAL SALES MANAGER

National manufacturer of utility construction equipment, earthboring machines, winches, power take-offs, winders, augers, line construction and maintenance bodies, etc., seeks experienced sales and administrative executive, well-acquainted in the public utility field and familiar with the marketing aspects of the above product line. Liberal salary plus very substantial bonus arrangement. Headquartered in the Mid-West.

P-6799, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

CIVIL ENGINEERS III (Structures-Design)

$7327 — $8287

For expanded expressway program.
Applicants must:

1. Be citizens of the United States;
2. Have a Bachelor of Science degree in Civil Engineering from a recognized college or university; and,
3. Have three years of recent experience as an engineer in structural design.

Generous fringe benefits. For announcement and application write:

WAYNE COUNTY CIVIL SERVICE COMMISSION
628 City-County Building
Detroit 26, Michigan

CIVIL ENGINEERS:

Expanding construction company in Connecticut has immediate openings for:

Field Superintendent for Commercial & Industrial Buildings

Field Superintendent for Land & Housing Development

Project Engineer for Design & Job Coordination

Send complete resume and minimum salary requirement to

P-6778, Engineering News-Record Class Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CONSTRUCTION SUPERINTENDENT

Broad experience in bldg. field req. Operate in capactiy of owner's representative on major expansion program of Metro. N.Y. hospital. State full qualif., exp., ref., & salary req.

P-6776, Engineering News-Record Class. Adv. Div. P. O. Box 12, N. Y. 36, N. Y.

DESIGNERS — SURVEYORS

Highway and Bridge Designers. Minimum 8 years exp. Registered Land Surveyors for Illinois. Usual benefits—permanent.

MACCABEE, CAMPBELL & Assocs.
173 W. Madison St. Chicago 2, Ill.

• POSITIONS WANTED
(Continued from preceding page)

BSCE, MSCE+, PE, RLS, age 33—Varied experience in design, maintenance and construction. Min. $9600. Resume on request. PW-6679, Engineering News-Record.

B.S. Arch. Engr., P.E., 34, 11 years comprehensive experience in all phases industrial and commercial construction, architectural and structural design. Desires responsible position with potential. PW-6738, Engineering News-Record.

Construction Engineer. Registered. 35 years all phases, preliminary design to construction, water supply, sewage treatment, bridges, tunnels, foundations and other heavy construction. Know construction methods and control. Available for supervision project construction. PW-6768, Engineering News-Record.

Construction Supt. Heavy Construction. PW-4482, Engineering News-Record.

Former Consultant—strong in materials handling and plant layout field. Supervised erection of large facilities, including plant and machinery. Personable, sales-minded. 35 yrs. of age, seeks position with growth in New York or Northern New Jersey area. PW-6773, Engineering News-Record.

Project Manager, entire supervision, contract negotiations, estimating, claims. 22 yrs. hvy. constr. major projects U.S. & O.S. PW-6804, Engineering News-Record.

Reg. Civil Engr., BSCE, 36, 12 yrs. exp. in studies, design & superv'n of hwy, airp't & other hvy constr. Desires challenging opportunity in civil or related field in NE. PW-6798, Engineering News-Record.

General Superintendent — Proj Mgr, Hvy Const. roads, bldgs, flood control, tunnels, excellent mech. background. P.O. Box 48, St. Louis 5, Mo.

P.E. age 32, married. BS in San. Eng. Wide experience in ground water, promotional work, client contact thru job completion. 9 yrs. exp. Desires to relocate. PW-6803, Engineering News-Record.

Civil-Structural Engineer, registered, 10 years of varied design and construction experience on all types of architectural and civil projects. Past two years teaching Structural Design in college. PW-6802, Engineering News-Record.

Construction Manager-General Superintendent: Twenty five years responsible charge—housing, commercial, industrial, institutional, Government and private financed projects. Cost conscious administrator, coordinator, organizer, estimator, expeditor, practical knowledge of contracts, procedures, purchasing, layout construction methods, plant and equipment. Excellent references—John J. Kearney—315 Dixie Drive, Towson 4, Maryland. Telephone—Valley 3-1946.

Sanitary Engineer, age 37, MS degree, desires new opportunity. Broad background in water and waste fields. Available immediately. Present location New England. Write for resume. PW-6799, Engineering News-Record.

Capable estimator, resident of New Mexico, six years experience, well qualified in all phases of commercial and industrial construction. Interested in contacting organization contemplating starting operation in New Mexico area. PW-6792, Engineering News-Record.

Government Property Administrator—available immediately. 15 years top level experience in warehouse management and operations on various construction jobs in all parts of the world. Familiar all types supplies, hardware, materials, P.O.L. products, heavy equipment and spare parts. Age 44—have passport, security clearance, excellent health —wife and 2 children—all will travel—good knowledge Spanish. P.O. Box 1, Highland Lake, N. Y.

M.C.E.—35, single, registered, 11 yrs. design exp.—desire bridge design with large consultant—prefer N.Y. or Calif. PW-6781, Engineering News-Record.

• SELLING OPPORTUNITY WANTED

Registered P.E. seeks lines in fabricated steel products or related items requiring engineering, estimating and sales experience. Operate from own office in Birmingham, Alabama. Reply RA-6794, Engineering News-Record.

SEARCHLIGHT SECTION
CLASSIFIED ADVERTISING

Send New ADS or Inquiries to Class. Adv. of Engineering News-Record, P. O. Box 12, New York 36, N. Y., For June 15th Issue Closing June 5th

EQUIPMENT USED
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Editorials

The Bulldozer Blackmail

IT REMAINED TO BE SEEN last week just what tractors or dozers Cuba's bearded trader of human freedom for horsepower would demand. And there remained, of course, bigger questions about the fantastic tractors-for-freedom deal. The U. S. government tried to keep clear of Fidel Castro's brazen barter; humanely, however, the government moved to make possible private negotiations with the Cuban dictator. Gnawing questions persisted as to the final outcome and net effect of the deal.

The particular question of what Castro would demand revolved around size and type of machines—whether they are to be mostly powerful track-type dozers or light farm tractors. Question is: Does he truly want machines to "build Cuba's peaceful economy?" Walter Reuther, co-chairman of Tractors for Freedom, took pains in an early press conference to stress that all tractors can do is move earth. Tractors are machines of peace, he indicated. Mr. Reuther should know better.

Tractors are tractors, and all they can do is pull or push things. Bulldozers move earth, and maybe all these great machines can do well is move earth, but they can move it as effectively for war as in peace. Bulldozers hit the beach in early hours of D-Day in Normandy and in many another lesser invasion effort of World War II. And long before the invaders' dozers came ashore, the defenders' dozers had done their work of preparing fortifications.

Mr. Castro will apparently get his tractors and/or dozers. A distasteful deal will be negotiated to buy the priceless freedom of his prisoners. So be it. But let us not naively conclude Cuba's gain in horsepower is harmless if the blackmail produces powerful bulldozers. In war, bulldozers come first.

Thorny Path for Plastics?

MANY EXCITING POSSIBILITIES are opened to the construction industry by the advances made with plastics. The construction industry will benefit to the extent it puts these new products to good use. But constructors will apparently choose these materials with care.

The plastics industry is on the right track with its education campaign (see p. 17). By familiarizing construction men with the properties of plastics and demonstrating useful applications, plastics producers will hasten acceptance of those products that merit it.

The plastics industry has found out what other innovators had learned about the construction industry: Getting it to embrace a new product is difficult, time consuming and costly. The path is thorny, and there are no shortcuts. But for those who know their way around, the path need not be unduly long.

In construction, designers, contractors and building officials want to be reasonably sure that use of something new is in the best interests of their clients or employers, presents no public nuisance or hazards, and violates no laws. The decision must be based on accurate information, determined not only from laboratory tests but also from tests of products in service. The faster such information is supplied, the faster the construction industry will accept new products.

But construction professionals should not ignore new products until spoonfed the data they would like to have. As part of their own professional development and as an obligation to their clients, they should seek knowledge of new products. If they don't see what they want, they should ask for it. By learning all the plastics industry has to offer, the construction industry will speed its own progress.

Lessons From 'Old Shaky'

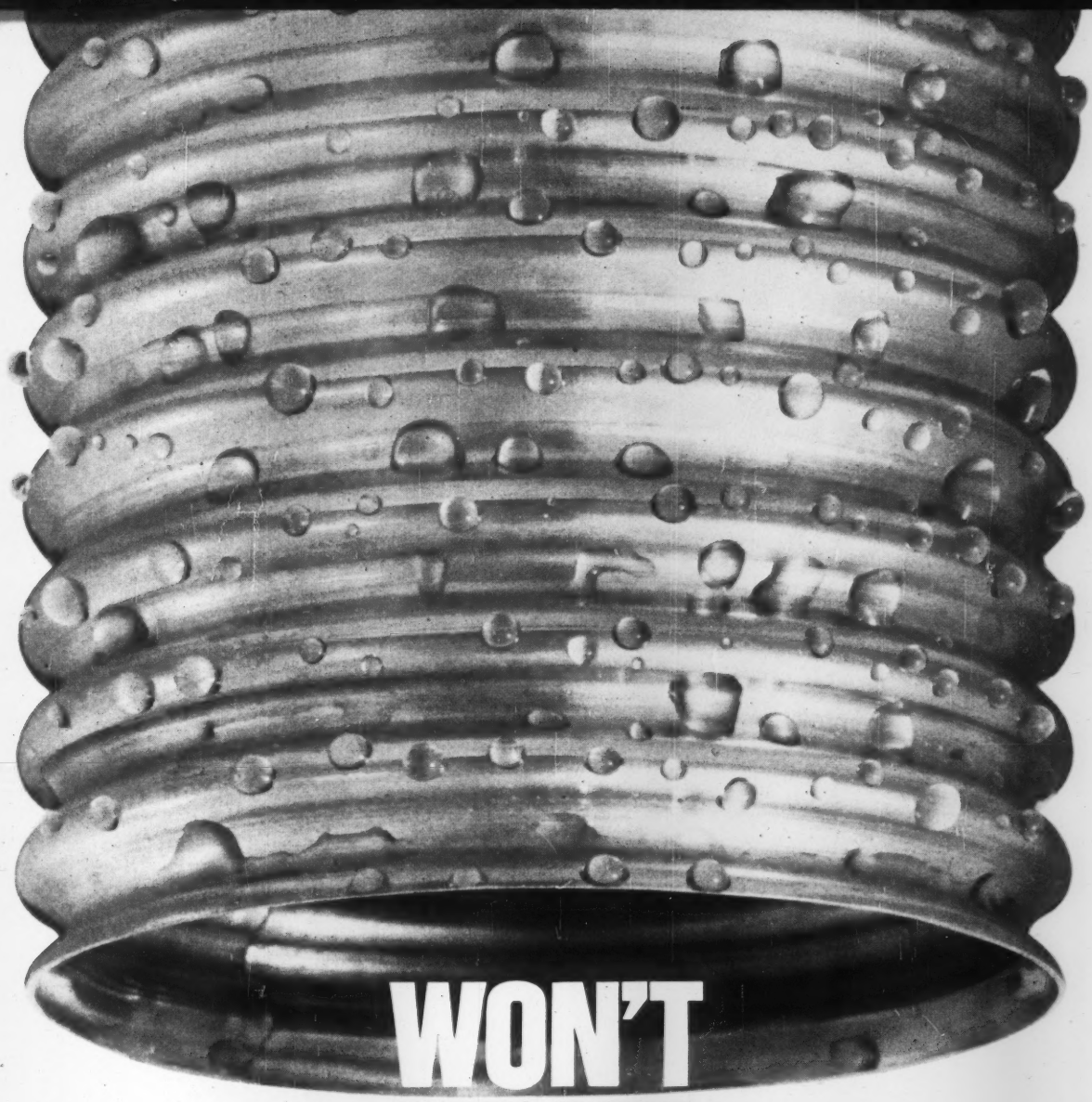
RECENTLY COMPLETED HEARINGS produced a remarkably full disclosure of all that might have been wrong with design and construction of Texas Tower No. 4—the radar platform that collapsed 80 miles off the Atlantic Coast. The Senate Preparedness Subcommittee will file a report on its hearings, probably within the next few weeks.

The committee did not concern itself with the tragic loss of 28 lives. That matter properly has been left to court-martial proceedings in the Air Force, which had decided to evacuate—but had not evacuated—the storm-ravaged tower when it groaned its last and collapsed on January 15.

All who appeared before the committee in its several sessions distinguished themselves with frank and open disclosures of their parts in the building of Texas Tower No. 4, or their views of how it should have been designed or constructed differently. Witnesses explained and criticized the design, the erection method, and the method of towing the tower to sea.

It will be interesting to see what the senators conclude. Best guess is that the congressional statement will criticize the Navy, construction agent for the Air Force, for failing to send the tower back to shore for repair of damage suffered as it was towed to sea. But the question will remain whether the ill-fated tower could have withstood the ravages of the open ocean even if it had been put in place completely without mishap. Hurricane Donna did, after all, subject the structure to forces beyond anything it was expected to experience.

Obviously, Texas Tower No. 4 was not designed and constructed for the beating it took, or it would still be standing. It took no congressional inquiry to establish that. It's as obvious as the fact that not all our missiles have been engineered properly; if they were, we'd never have a failure at Cape Canaveral. The testimony the Senate committee heard, if it did anything, should confirm the fact that this was a daring structure, undertaken where man had never built before, hopefully to resist forces that could only be estimated.



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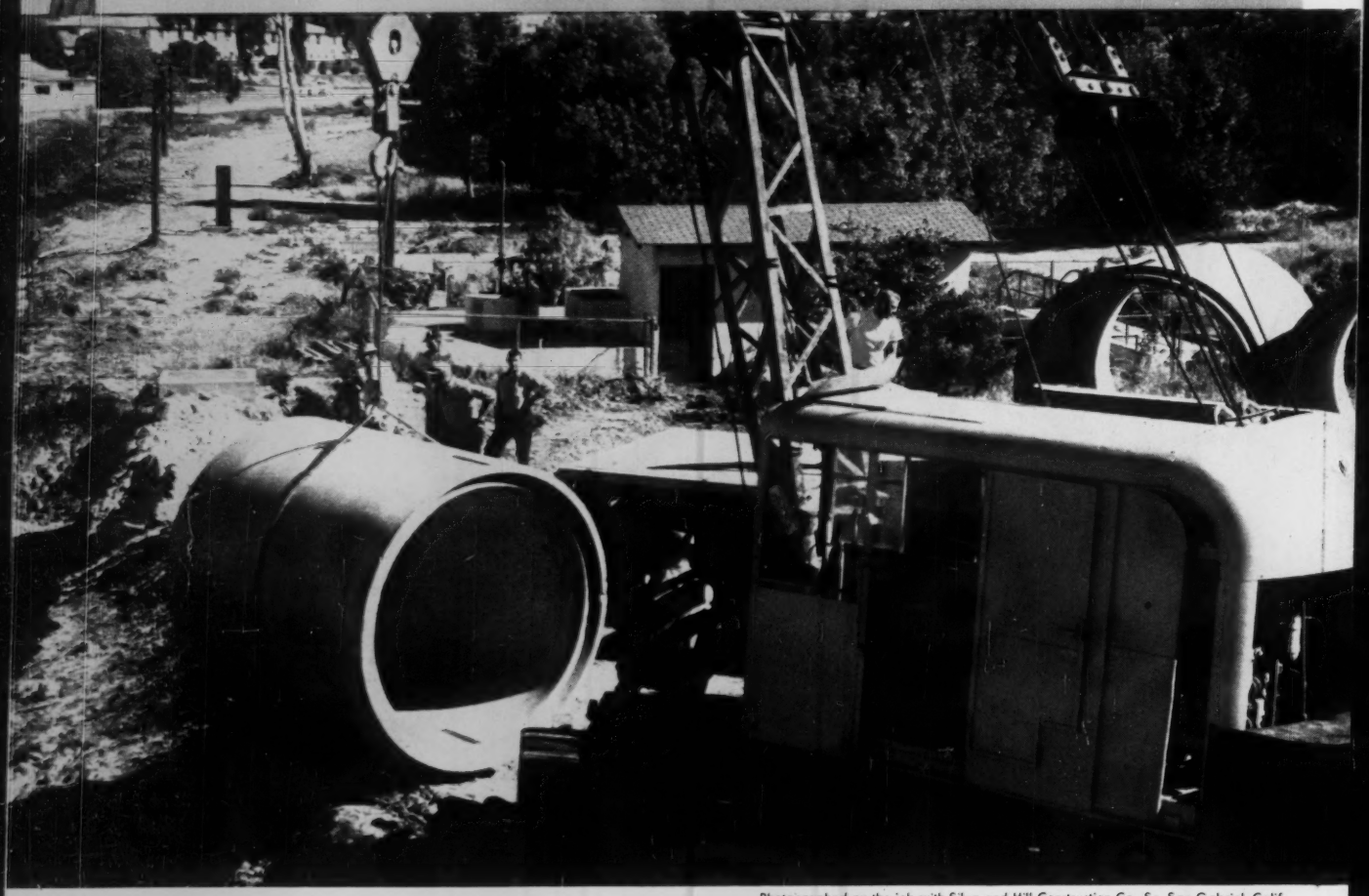

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